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CPC Annual Meeting: Searching in the CPC System Workshop

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Outline

- Overview of essential CPC scheme features
- Brief overview of CPC tools we will use today
- Classification search exercises covering electrical, mechanical and chemical areas
- Advanced features of the CPC scheme

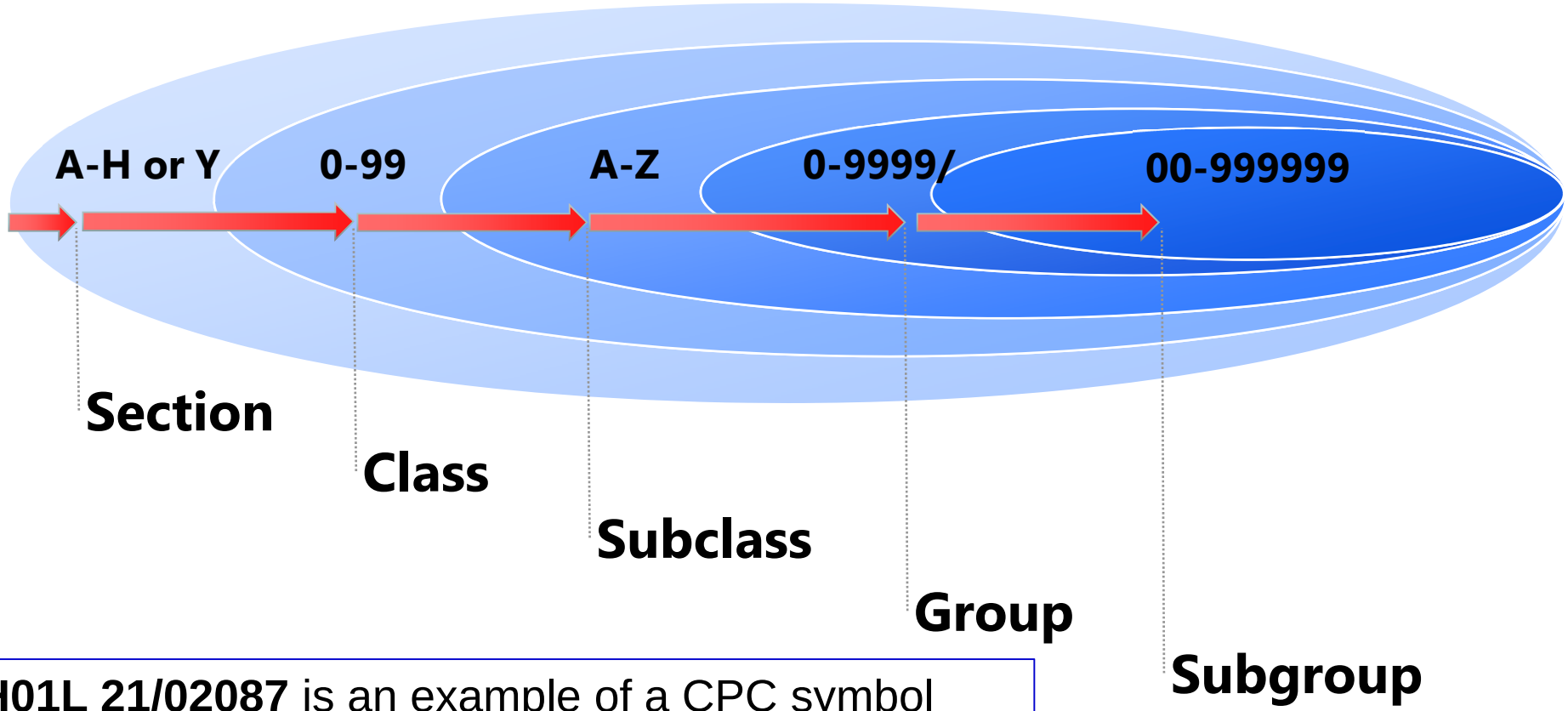
CPC: Where to Classify

- Patent applications / granted patents are classified by selecting appropriate CPC symbols which represent the invention and permit users to retrieve the document later

- All inventive features must be classified, i.e. multiple symbols are typically allocated

- Additional information that is interesting from the disclosure for search purposes is classified (efficient retrieval of documents)

The CPC Symbol



H01L 21/02087 is an example of a CPC symbol

H01L is the subclass identifier

H01 is the class

H is the section

Scheme Presentation

- Primary group titles in **black** are also in IPC
- Primary group titles and other information that are in green and surrounded by **{curly brackets}** are CPC only
- References **(pointers to other places)**
- In HTML version there are hyperlinks (to definitions and references)
  - Example:

The CPC Group (i.e., a Classification)

The CPC group H01L 21/02087 on its own looks like this:

	Symbol	Indent Level	Title [title date]
Group	H01L 21/02087	. . . . (4)	Cleaning of wafer edges [2013−01]

A CPC group:

Requisite

- Position in the scheme
- CPC symbol
- Indent level
- Title
- Revision date [YYYY-MM]

May Have

- **Notes** related to CPC
  - References to indexing groups that must be applied
- **Warnings**
- Glossary terms
- Definition is **Hyperlinked**
- References **(pointers to other places)**

A CPC Group (i.e., classification) in the CPC Scheme

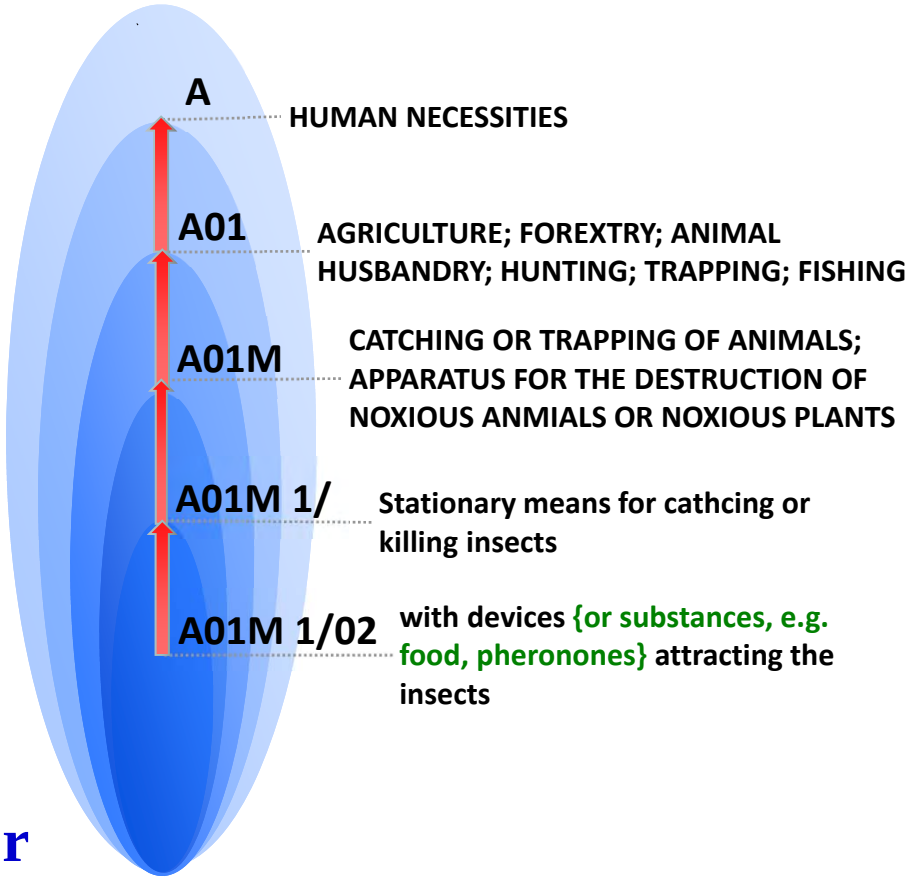
	Section; Section identifier	**H**		ELECTRICITY
	Class; Class identifier	**H01**		BASIC ELECTRIC ELEMENTS [2013-01]
^ | | | | | | Group Position in CPC Scheme | | | | | | v	*Subclass identifier*	**H01L**		SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR
	Parent groups of 4-dot group of interest	*Group symbol*	*Indent level*	
	Main group	**H01L21/00**	(0)	Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof [2013−01]
	1-dot parent group	**H01L 21/02**	. (1)	Manufacture or treatment of semiconductor devices or of parts thereof [2013−01]
	2-dot parent group	**H01L 21/02041**	. . (2)	cleaning [2013−01]
	3-dot parent group	**H01L 21/02082**	. . . (3)	product to be cleaned [2013−01]
	4-dot group of interest	**H01L 21/02087**	**. . . . (4)**	**Cleaning of wafer edges [2013−01]**

Titles and Scope

Scope of CPC entry (place) is

- the technical subject matter that is covered by a place
- always defined by title of place + titles of hierarchically higher places

Sections, classes: titles only broadly indicative of content



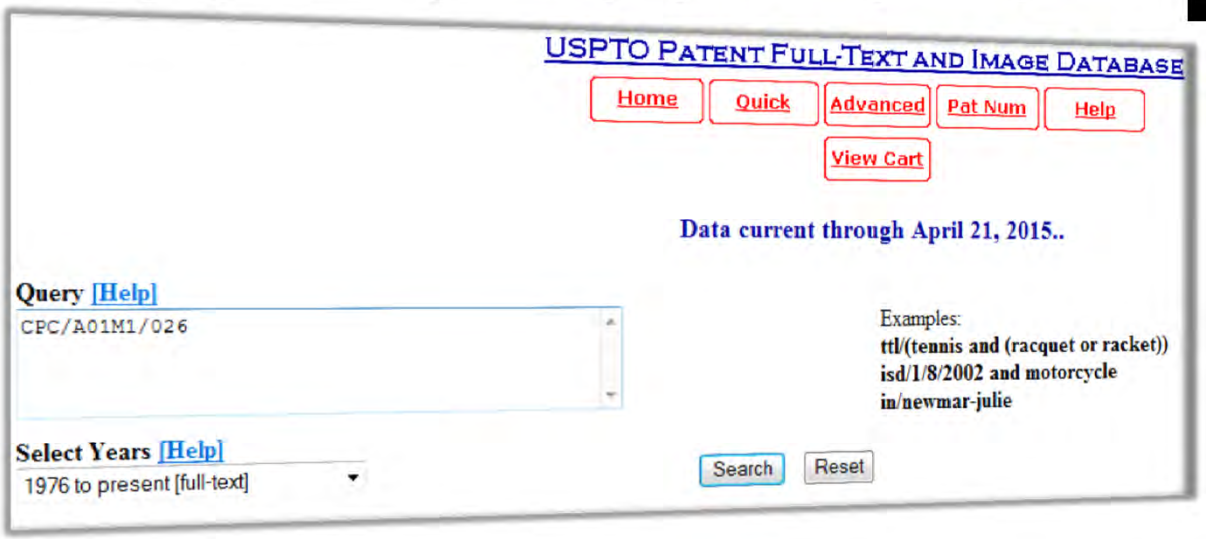
Subclasses, groups (Main groups or subgroups): titles define specific content which fall in the area as precisely as possible

Slide 9

BDN3 need to move slides 21-23 and bring them top after introduction of CPC
Bodawala, Dimple N.; 13-09-2016

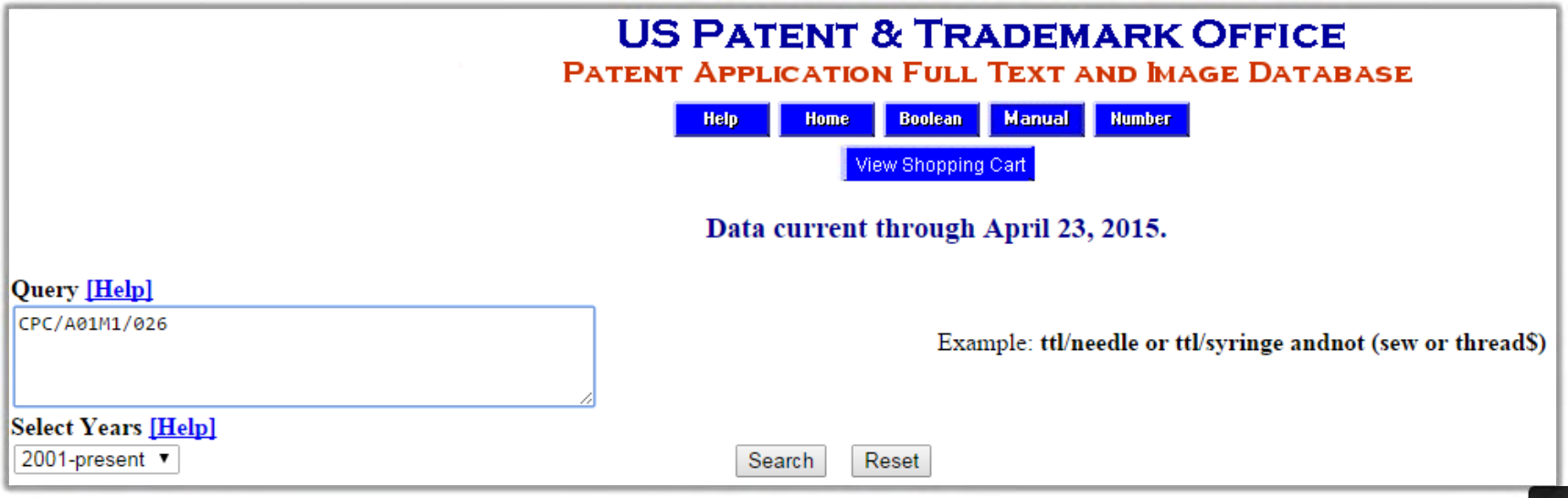
TOOLS USED DURING EXERCISES

USPTO PatFT and AppFT

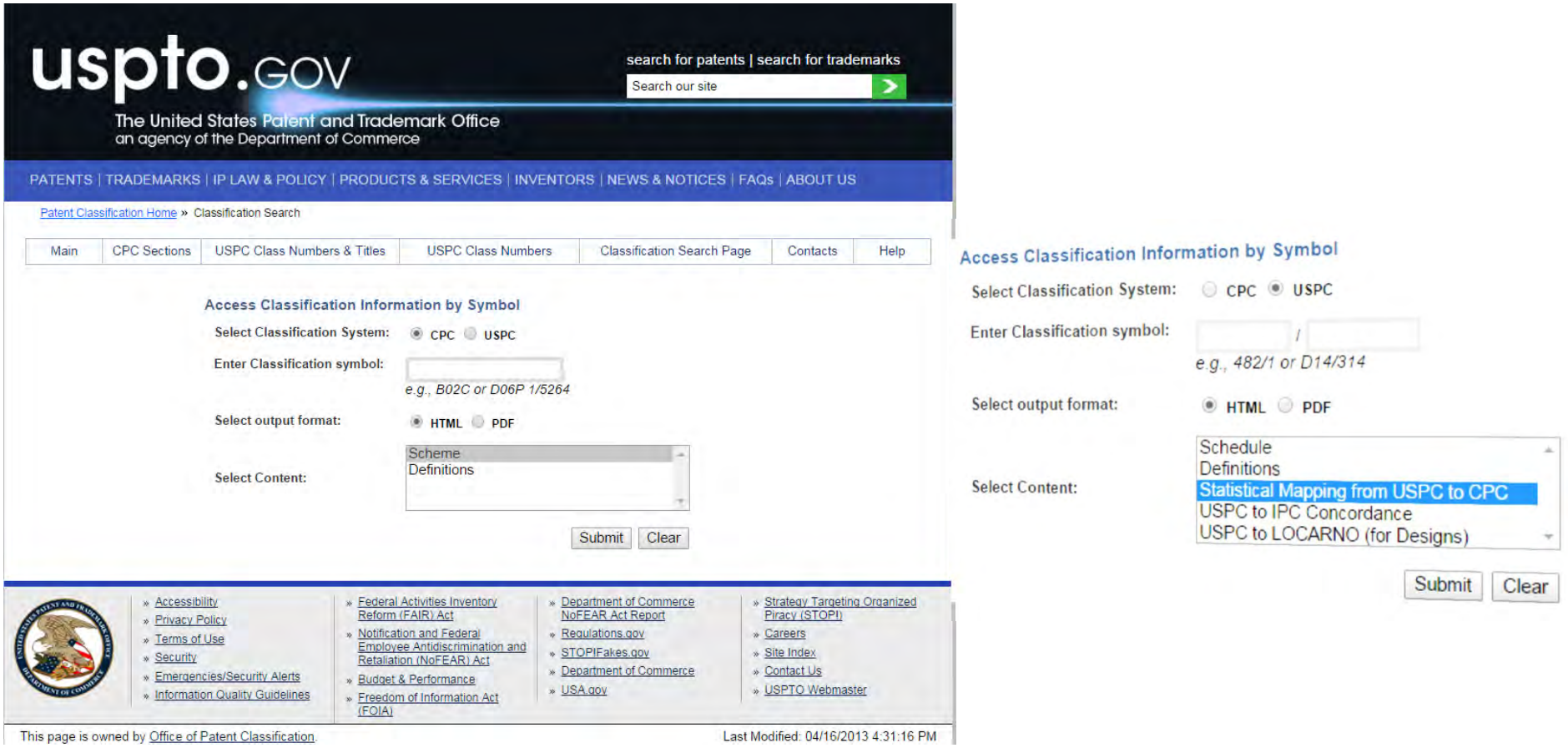


Field Code	Field Name
CPC	Current CPC Classification
CPCL	Current CPC Classification Class

http://patft.uspto.gov/

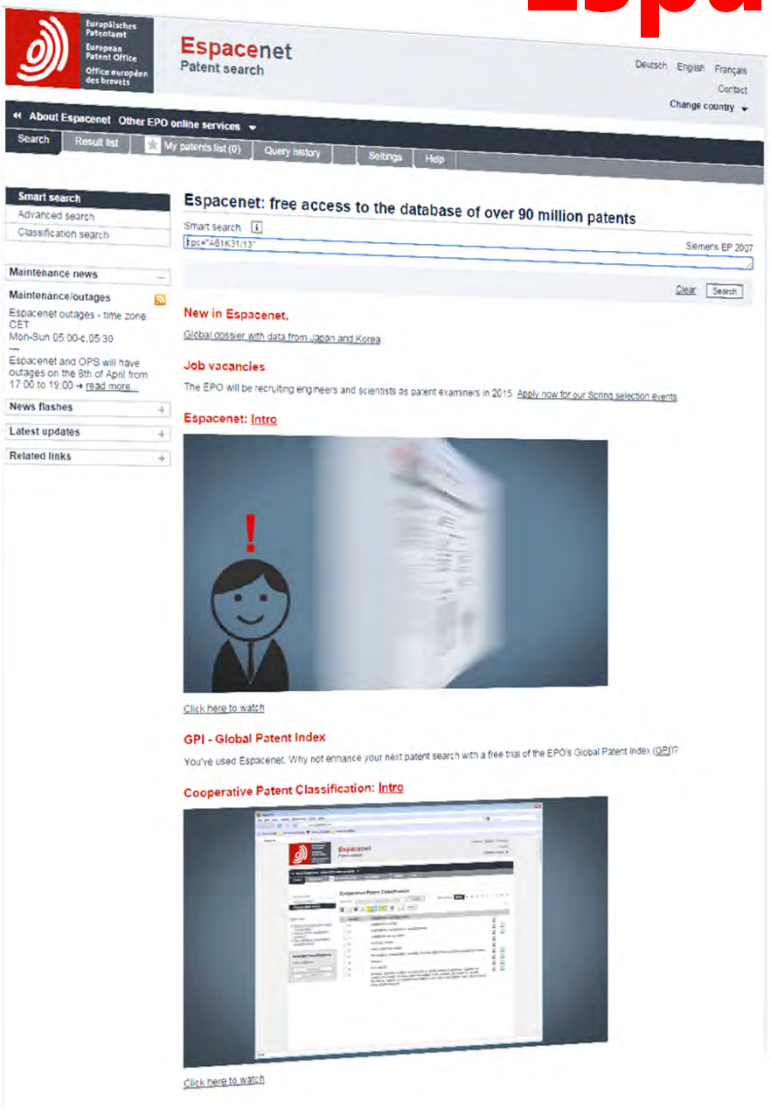


USPTO CPC Classification Search



http://www.uspto.gov/web/patents/classification/

Espacenet



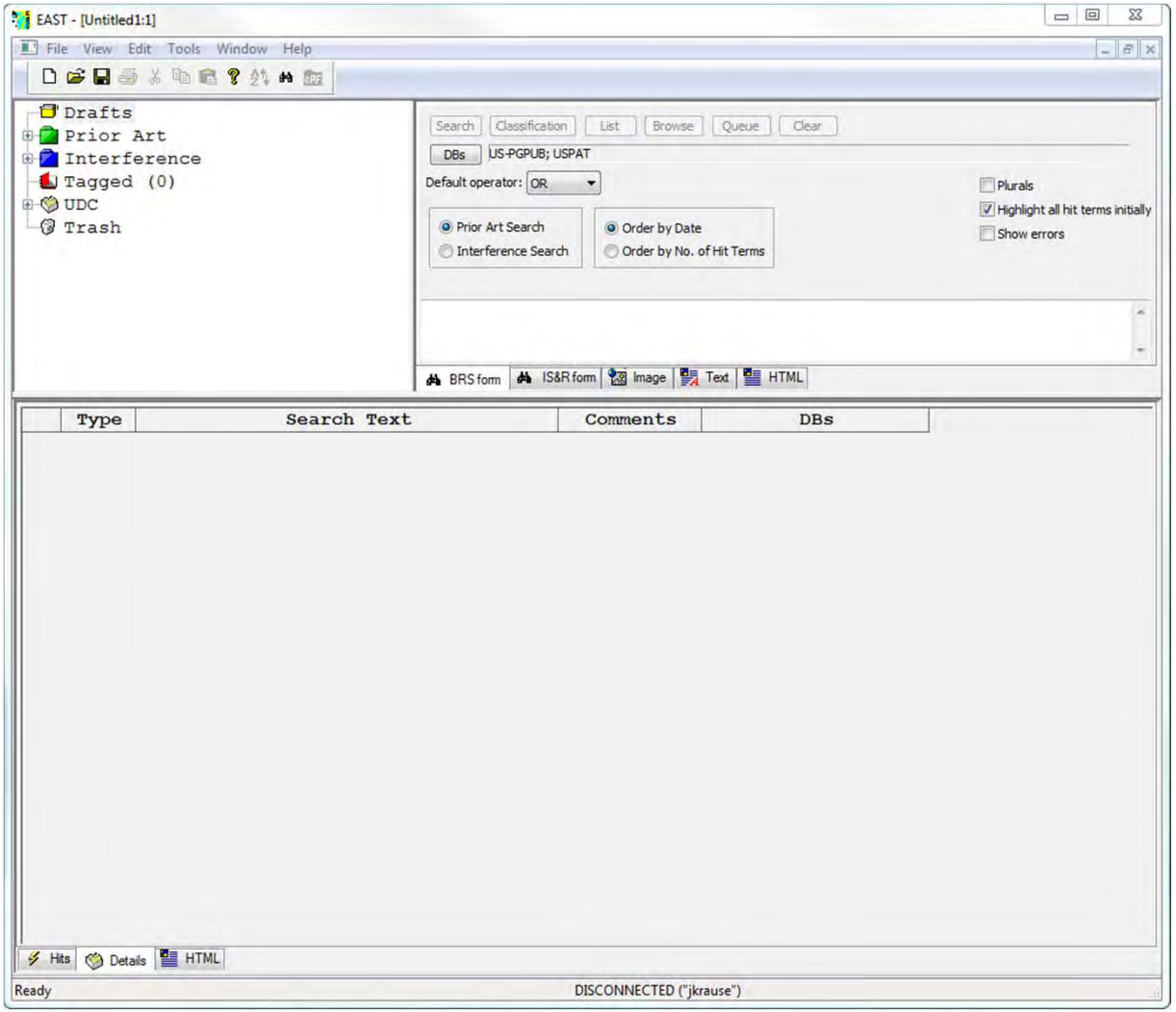
Field identifier	Examples
cpc	cpc="A61K31/13"

http://worldwide.espacenet.com/

Google Patents

- Patents.google.com

EAST (Examiners Automated Search Tool)



Only available to Public Searchers in the USPTO Public Search Room

EAST Search Operators

- Boolean Operators
  - OR – TermA or TermB or both are in the document
  - AND – TermA and TermB are both in the document
  - NOT – TermA not TermB in the document
  - XOR – TermA or TermB but not both in the document

EAST Search Operators

- Proximity Operators
  - ADJ – TermA next to TermB in the order specified in the same sentence
  - ADJn – TermA within n terms of B in the order specified in the same sentence
  - NEAR – Term A next to TermB in any order in the same sentence
  - NEARn – TermA within n terms of TermB in any order in the same sentence
  - WITH – TermA in the same sentence with TermB
  - SAME – TermA in the same paragraph with TermB

- *Note – n can be 1-99, ADJ is equal to ADJ1, NEAR is equal to NEAR1*

EAST Search Operators

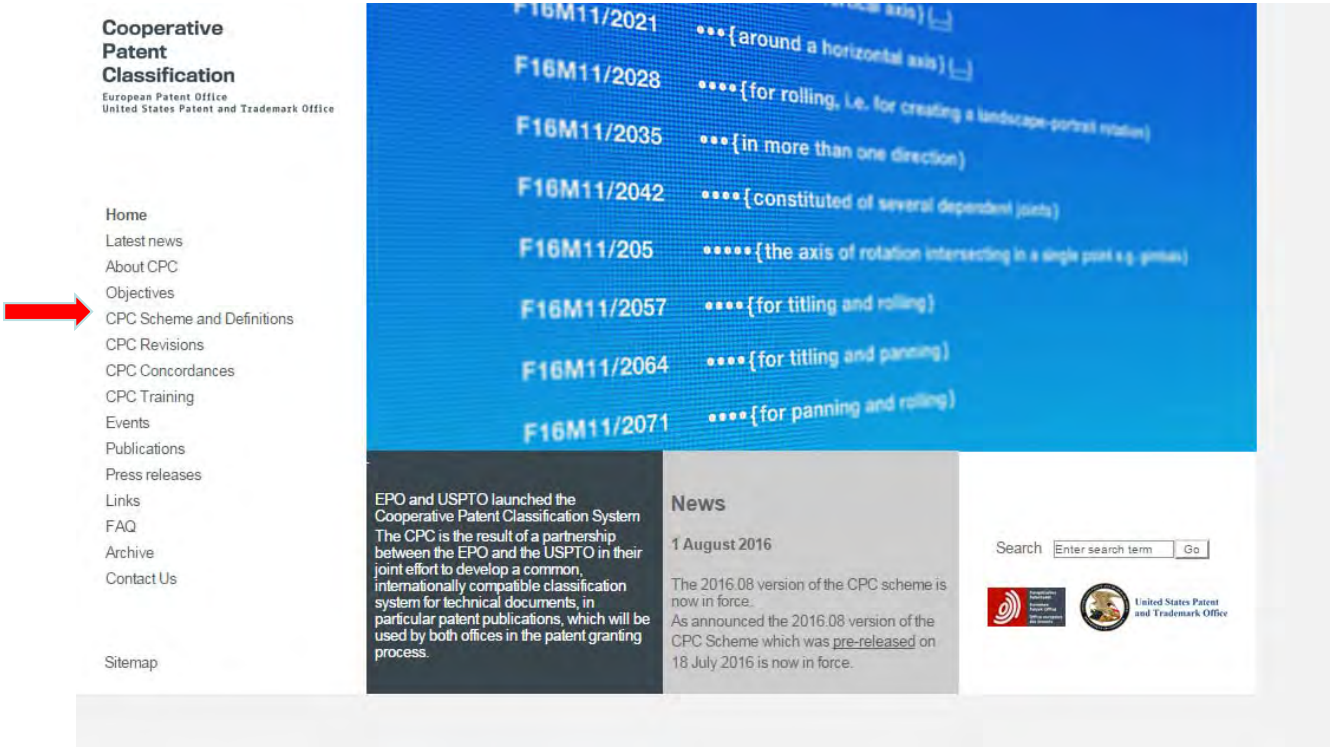
- Truncation
  - $ - Zero to unlimited characters
  - $n – Zero to n extra characters
  - ? – Exactly 1 character

EAST Search Operators

- CPC Searchable Indices
  - Search all CPC allocations = .cpc.
  - Search only inventive allocations = .cpci.
  - Search only additional allocations = .cpca.
    - For breakdown and orthogonal index codes (2000-series), only use .cpca. or .cpc. There are no inventive allocations in the indexes.

CPC Scheme

- The Current CPC Scheme can also be found on www.cpcinfo.org



Search Table

Document Number					
Search Features	Search Concept #1	Search Concept #2	Search Concept #3	Search Concept #4	Relevance of Results?
1)					
	Result:	Result:	Result:	Result:	
2)					
	Result:	Result:	Result:	Result:	
3)					
	Result:	Result:	Result:	Result:	
4)					
	Result:	Result:	Result:	Result:	
5)					
	Result:	Result:	Result:	Result:	

Examples and Search Techniques

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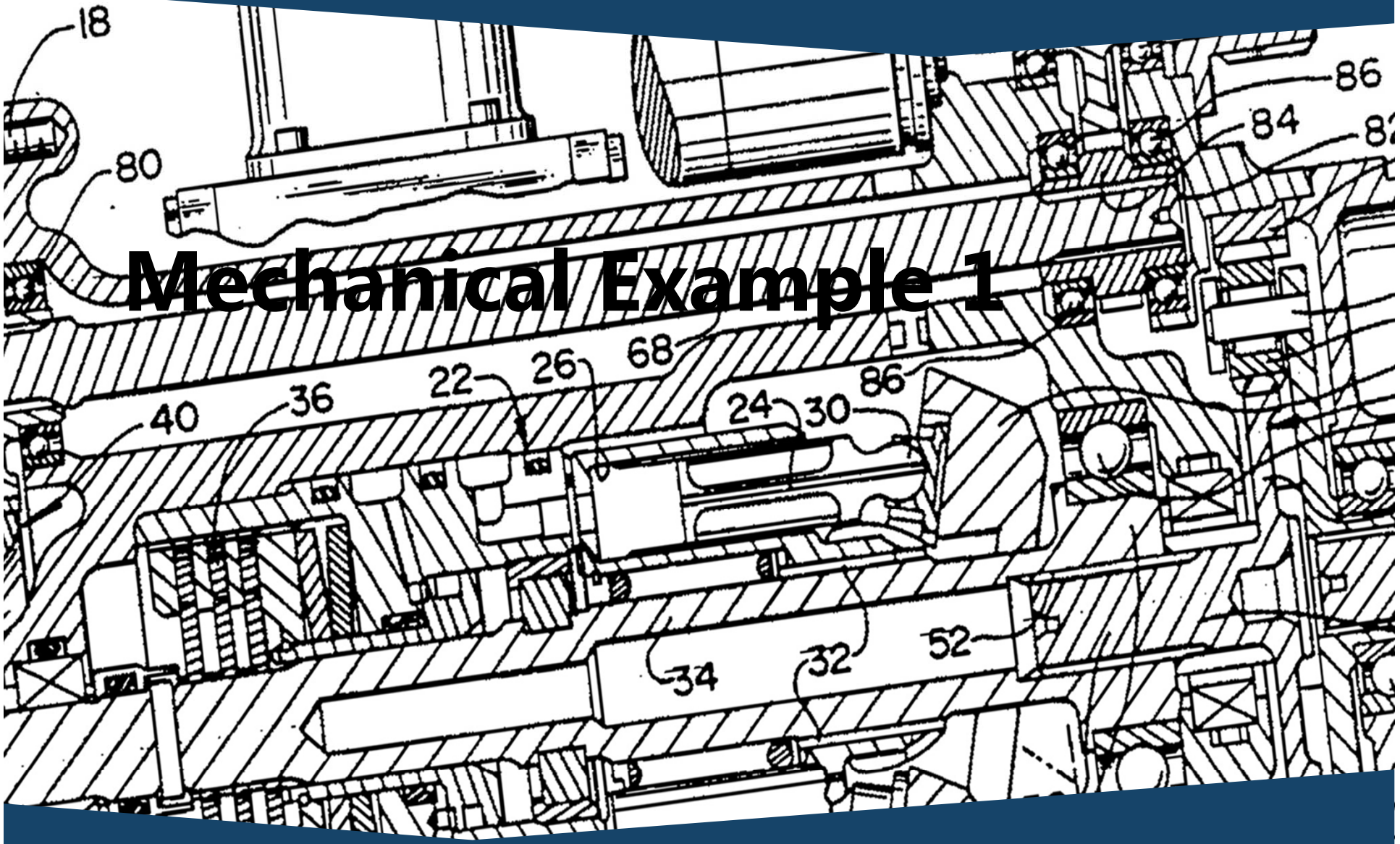
Mechanical Example 1



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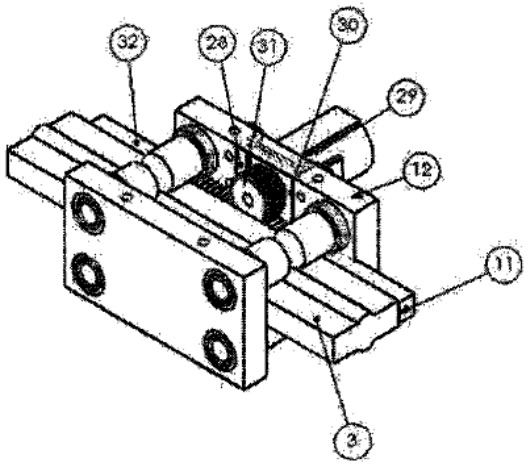
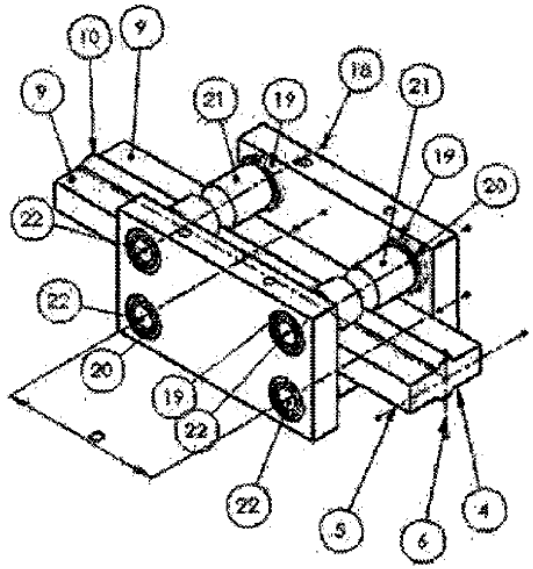
The invention relates to a compact linear roller guide which makes it possible to transmit high forces and torques between a carriage (1) and a guide rail (3). The carriage (1) comprises two or more pairs of ribbed rollers (2), rotatably supported on the side walls of the carriage by means of bearings, between which the rail (3) is inserted, with a complementary cross-section, The simultaneous contact of the planar and convex surfaces of the rail (3) with the cylindrical and concave surfaces of the rollers (2) enables uniform distribution of the loads on said bearings and a compact configuration of the guide.





1. A compact linear roller guide capable of transmitting forces and high torques between a sliding carriage, defined by a longitudinal axis and a rectangular cross section, comprising a guide and transmission rail having a cross section composed of a section of rectangular area alternated with two upper and lower sections of convex area which is inserted longitudinally into the carriage, wherein said guide and transmission rail is housed between an assembly of rotational support members comprising at least one or more pairs of grooved rollers each pair of grooved rollers being supported on shanks, internal raceways and a bearing for axial and radial loads, wherein said rollers radially traverse the carriage to be inserted in a perpendicular manner into two of the facing lateral walls of the carriage.

7. The compact linear roller guide capable of transmitting forces and high torques of claim 1, wherein it permits a system of power transmission to be connected between the sliding carriage and the guide and load transmission rail, wherein in at least one of the facing plates wherein the bearings are mounted a centered orifice is realized between the planes wherein are aligned the pairs of grooved rollers, to insert a motor and the support thereof, wherein by means of a pinion on the motor shaft power is transmitted to a rack longitudinally abutting onto at least one of the flanks of the guide and load transmission rail.

US 2014/0326087

Determine the Invention

- Inventive subject matter can be found anywhere within the document
  - Drawings
  - Specification
  - Claims

Determine the Invention

- The present document discloses a compact linear roller guide which, by virtue of the configuration and geometric distribution thereof, is capable of transmitting forces and high tension moments, in addition to achieving high precision in the linear displacement of the load. This linear guide in turn presents novel characteristics, such as the implementation of grooved rollers guided by means of a guide rail having surfaces especially designed to uniformly distribute the load on all the rollers comprised in the sliding carriage. The constructive characteristics of the present linear guide permit a system of power transmission to be realized between the sliding carriage and the guide rail by inserting a motor and the support thereof into at least one of the walls of the sliding carriage and within the space between the grooved rollers in such manner that, by means of a pinion mounted on the motor shaft, power may be transmitted to the rail by a longitudinally abutting rack, maintaining the very small physical dimensions, permitting the utilization of said linear guide in diverse applications requiring both precision and high load capacity.

Specification Paragraph 0006

Identify Search Features

Document Number					
Search Features	Search Concept #1	Search Concept #2	Search Concept #3	Search Concept #4	Relevance of Results?
1)Carriage with bearings					
	Result:	Result:	Result:	Result:	
2)Guide rail					
	Result:	Result:	Result:	Result:	
3) Rack and pinion power transmission					
	Result:	Result:	Result:	Result:	
4)					
	Result:	Result:	Result:	Result:	
5)					
	Result:	Result:	Result:	Result:	

Espacenet Classification Search

Wildcards

* a string of characters of any length
? zero or one character
exactly one character

Proximity operators

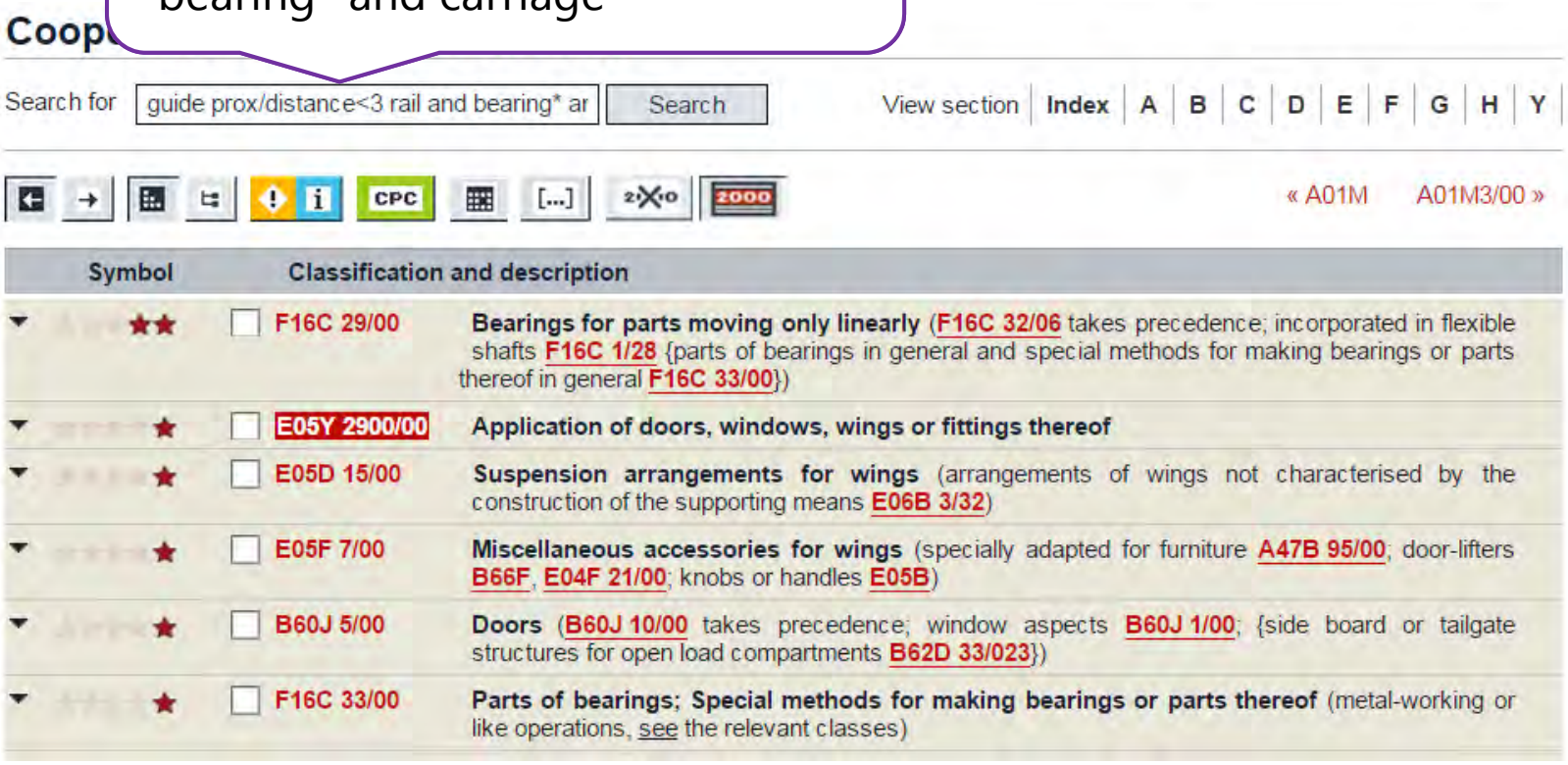
Example: guide prox/distance<3 rail
The system will find patent documents where the words guide and rail are less than three words apart in the TXT identifier.

Example: guide prox/unit=sentence rail
The system will find patent documents where the words mouse and trap happen to be in the same sentence in the TXT identifier.

Example: guide prox/unit=paragraph rail
The system will find patent documents where the words mouse and trap happen to be in the same paragraph in the TXT identifier.

Identify Relevant CPC Groups

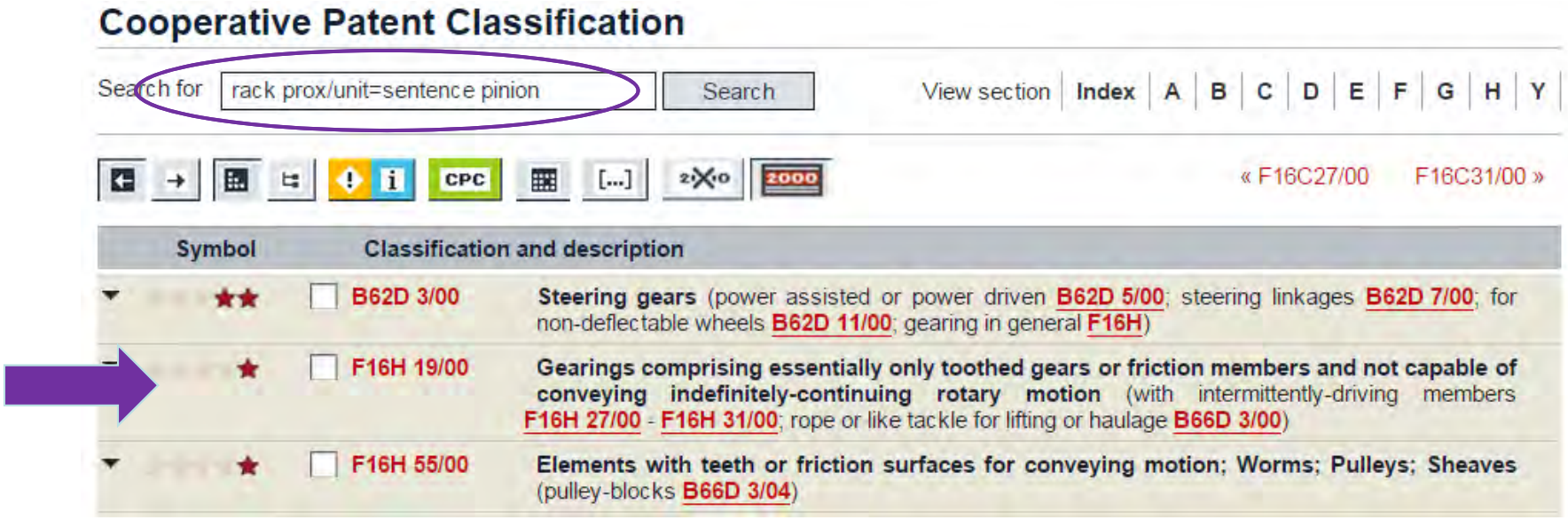
Enter search terms:
guide prox/distance<3 rail and bearing* and carriage



Identify Relevant CPC Groups

F16C 29/00	**Bearings for parts moving only linearly** (F16C 32/06 takes precedence; incorporated in flexible shafts F16C 1/28 {parts of bearings in general and special methods for making bearings or parts thereof in general F16C 33/00})	D
F16C 29/001	• {adjustable for alignment or positioning}	
F16C 29/002	• {Elastic or yielding linear bearings or bearing supports}	
F16C 29/004	• {Fixing of a carriage or rail, e.g. rigid mounting to a support structure or a movable part}	
F16C 29/005	• {Guide rails or tracks for a linear bearing, i.e. adapted for movement of a carriage or bearing body there along}	
F16C 29/007	• {Hybrid linear bearings, i.e. including more than one bearing type, e.g. sliding contact bearings as well as rolling contact bearings}	
F16C 29/008	• {Systems with a plurality of bearings, e.g. four carriages supporting a slide on two parallel rails}	
F16C 29/02	• Sliding-contact bearings	
F16C 29/025	•• {Hydrostatic or aerostatic (this type of bearing for rotary parts F16C 32/06)}	
F16C 29/04	• Ball or roller bearings	
F16C 29/041	•• {having rollers crossed within a row}	
F16C 29/043	•• {with two massive rectangular rails having facing grooves}	
F16C 29/045	•• {having rolling elements journaled in one of the moving parts}	
F16C 29/046	••• {with balls journaled in pockets}	
F16C 29/048	•• {with thin walled races, e.g. tracks of sheet metal}	
F16C 29/06	•• in which the rolling bodies circulate partly without carrying load	
F16C 29/0602	••• {Details of the bearing body or carriage or parts thereof, e.g. methods for manufacturing or assembly}	

Identify Relevant CPC Groups



Identify Relevant CPC Groups

★★★★★	F16H 19/00	**Gearings comprising essentially only toothed gears or friction members and not capable of conveying indefinitely-continuing rotary motion** (with intermittently-driving members F16H 27/00 - F16H 31/00; rope or like tackle for lifting or haulage B66D 3/00)
	F16H 19/001	•{for conveying reciprocating or limited rotary motion}
	F16H 19/003	••{comprising a flexible member}
	F16H 19/005	•••{for conveying oscillating or limited rotary motion}
	F16H 19/006	•••{for converting reciprocating into an other reciprocating motion}
	F16H 2019/008	••{Facilitating the engagement or stopping of gear sections}
	F16H 19/02	•for interconverting rotary {or oscillating} motion and reciprocating motion
	F16H 19/025	••{comprising a friction shaft}
	F16H 19/04	••comprising a rack
	F16H 19/043	•••{for converting reciprocating movement in a continuous rotary movement or vice versa, e.g. by opposite racks engaging intermittently for a part of the stroke}
	F16H 2019/046	•••{Facilitating the engagement or stopping of racks}

Conduct Search

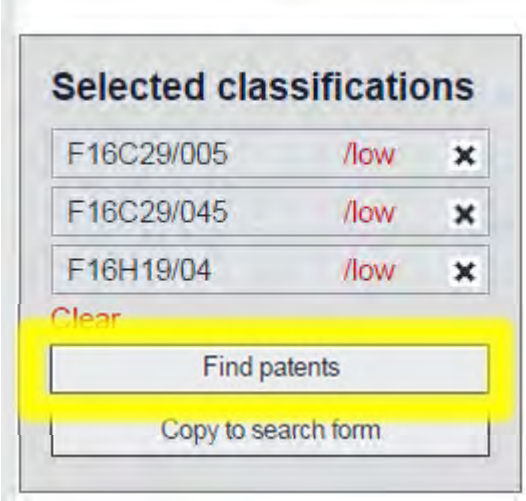
Document Number					
Search Features	Search Concept #1	Search Concept #2	Search Concept #3	Search Concept #4	Relevance of Results?
1)Carriage with bearings	F16C29/045	F16C29/045 and F16C29/005 and F16H19/04	F16C29/045 and F16C29/005		
	Result:	Result:	Result:	Result:	
2)Guide rail	F16C29/005				
	Result:	Result:	Result:	Result:	
3) Rack and pinion power transmission	F16H19/04	F16H19/04 and linear adj guide			
	Result:	Result:	Result:	Result:	
4)					
	Result:	Result:	Result:	Result:	
5)					
	Result:	Result:	Result:	Result:	

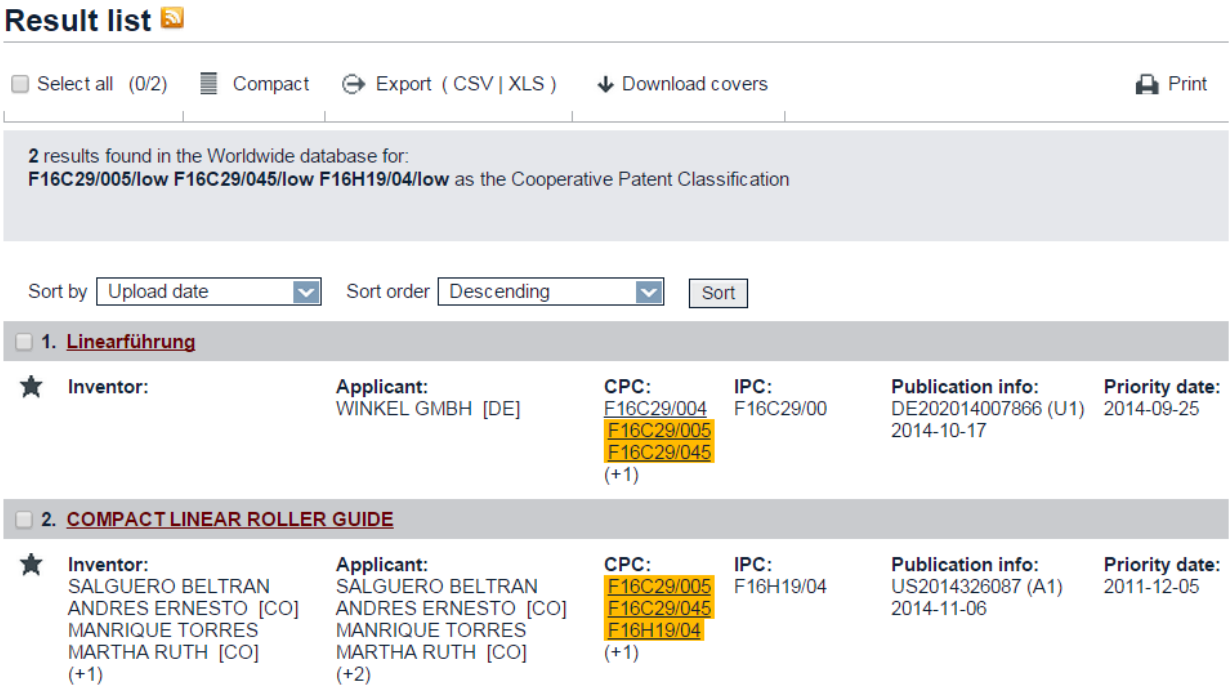
Conduct Search

- Searching can be conducted 3 ways:
  - Classification Symbols Only
  - Text Only
  - Combining Classification Symbols with Text

Conduct Search

Classification Searching Only





Conduct Search

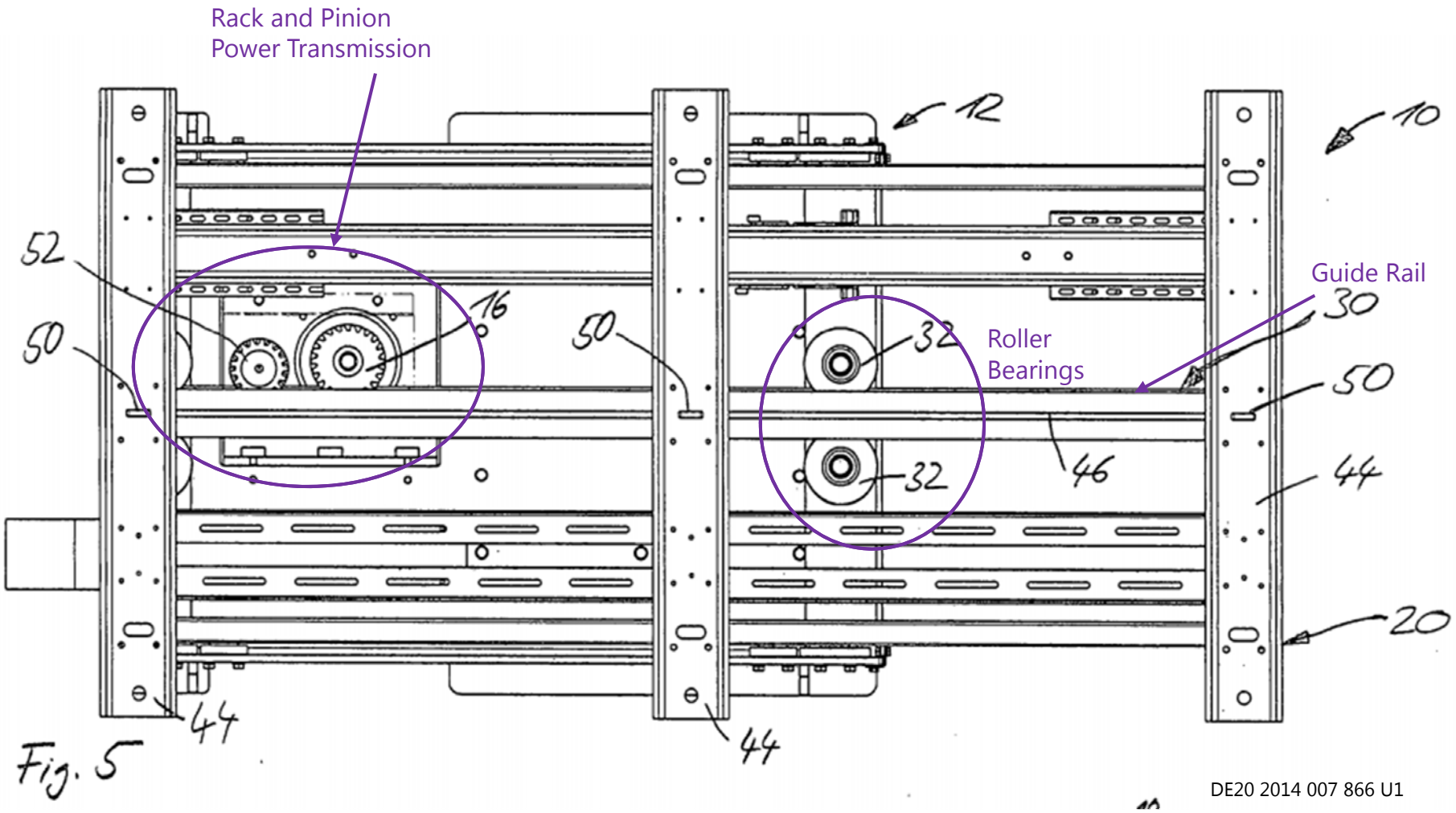
Classification Searching with Text

Searching Classification Symbols with Text can be useful when the text terms are too generic to search alone, or when multiple CPC subclasses are necessary to find the invention.

Relevant Text Terms

One or More CPC Symbols

Evaluate Results



DE20 2014 007 866 U1

Evaluate Results

United States Patent [19]
Tsuboi

[11] **Patent Number: 5,735,214**
[45] **Date of Patent: Apr. 7, 1998**

[54] **STREAMLINE TRACK SYSTEM WITH CARRIERS AND RAIL**

[76] Inventor: **Nobuyuki Tsuboi**, 23-2-706 Hayakocho, Neyagawa City, Osaka 572, Japan

[21] Appl. No.: **773,830**

[22] Filed: **Dec. 27, 1996**

[51] **Int. Cl.**[6] **B61C 11/04**

[52] **U.S. Cl.** **105/29.1**; 105/144; 104/106; 104/119; 384/13; 384/55; 384/57; 384/58

[58] **Field of Search** 105/29.1, 141, 105/144; 104/106, 118, 119; 384/13, 49, 50, 55, 57, 58, 59

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,552,805	1/1971	Dunlap	384/58
3,756,670	9/1973	Harris	105/29.1
4,422,384	12/1983	Johnson et al.	105/29.1
5,086,705	2/1992	Jarvis	105/29.1
5,267,796	12/1993	Nonaka et al.	384/13

FOREIGN PATENT DOCUMENTS

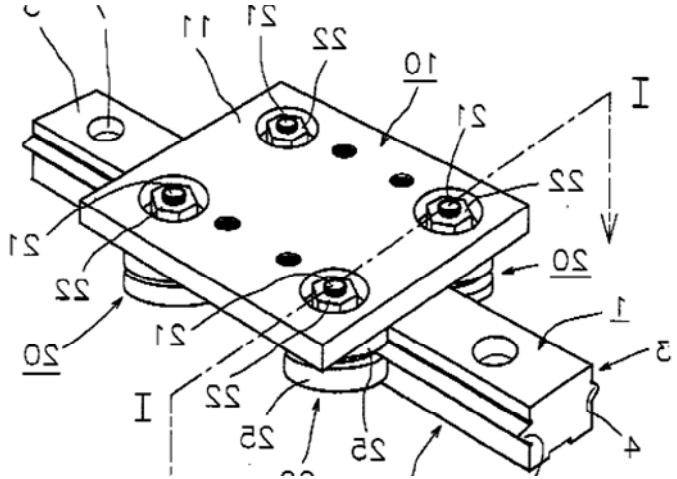
2113114	4/1990	Japan	384/58
681412	10/1952	United Kingdom .	

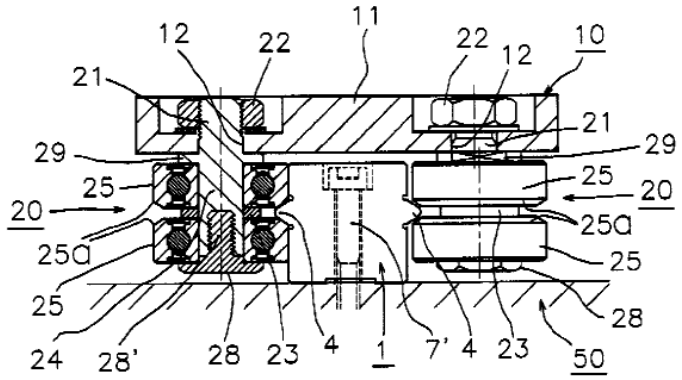
Primary Examiner—S. Joseph Morano
Attorney, Agent, or Firm—Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

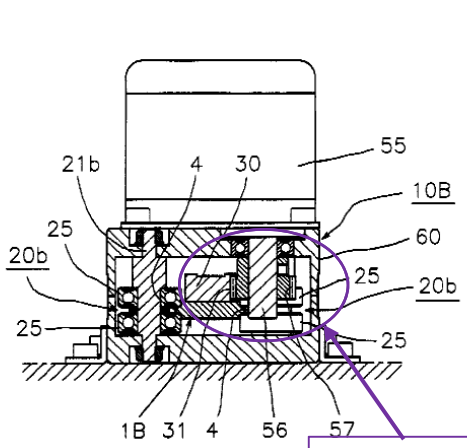
[57] **ABSTRACT**

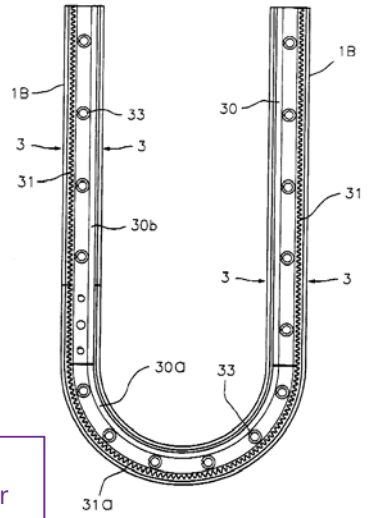
A track system for roller-equipped carriers to run along a straight and/or curving guide rail, which includes two pairs of opposed parallel plain lanes, a pair of oppositely directed parallel V edges intermediate the two pairs of plain lanes, and narrow lubricating grooves along each V edge. Each carrier has a frame and roller assemblies, each having a pair of ball bearings mounted on a journal, spaced apart from each other and beveled oppositely on their adjacent outer race corners, so that the base areas of V edges engage between the beveled corners, and the top areas of V edges remain free within the space between the outer races in each pair, the outer races mostly rolling on the plain lanes. Each curving rail segment is provided with straight extensions formed on both ends to be connected to straight rail segments.

12 Claims, 10 Drawing Sheets









Rack and Pinion power transmission

Evaluate Results

(19) **United States**
(12) **Patent Application Publication**
Schroeder et al.
(10) **Pub. No.: US 2010/0129013 A1**
(43) **Pub. Date: May 27, 2010**

(54) **GUIDE RAIL HAVING BASE RAIL AND GEAR RACK, METHOD OF MAKING SAME, GUIDE ASSEMBLY INCLUDING SAME**

(75) Inventors: **Jonathan R. Schroeder**, Machesney Park, IL (US); **Timothy J. LeCrone**, Rockford, IL (US); **Joseph A. Binka**, Belvidere, IL (US)

Correspondence Address:
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2215 PERRYGREEN WAY
ROCKFORD, IL 61107 (US)

(73) Assignee: **PACIFIC BEARING COMPANY**, Rockford, IL (US)

(21) Appl. No.: **12/625,058**

(22) Filed: **Nov. 24, 2009**

Related U.S. Application Data

(60) Provisional application No. 61/117,795, filed on Nov. 25, 2008.

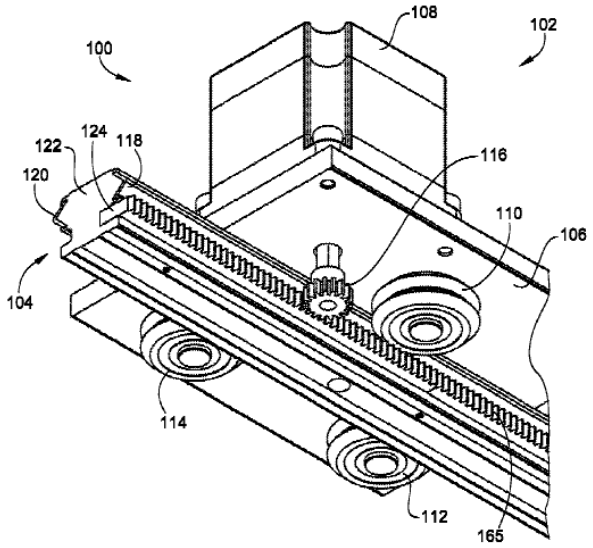
Publication Classification

(51) **Int. Cl.**
F16C 29/06 (2006.01)
B23P 11/00 (2006.01)

(52) **U.S. Cl.** **384/45**; 29/428

(57) **ABSTRACT**

A guide rail is provided. The guide rail includes a base rail and a gear rack mounted to the base rail. The guide rail also provides at least one race upon which a guide roller can ride. The guide rail defines a reference point related to the raceway that has a parallelism relative to the gear rack of less than or equal to 0.005 inches per foot along the length of the guide rail. Preferably, the reference point is defined directly by the raceway and the parallelism is less than or equal to 0.001 inches per foot. A method of forming the guide rail is also provided. The method includes machining the reference point into the guide rail and using the reference point to locate machining a seat for mounting the gear rack. A guide assembly including a guide rail and a carriage or frame structure is also provided.



US 20100126073A1

(19) **United States**
(12) **Patent Application Publication**
Schroeder et al.
(10) **Pub. No.: US 2010/0126073 A1**
(43) **Pub. Date: May 27, 2010**

(54) **ACTUATOR FOR ELEVATOR DOORS, ELEVATOR DOOR ARRANGEMENT INCLUDING SAME AND METHODS**

(75) Inventors: **Jonathan R. Schroeder**, Machesney Park, IL (US); **Joseph A. Binka**, Belvidere, IL (US); **Timothy J. LeCrone**, Rockford, IL (US)

Correspondence Address:
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2215 PERRYGREEN WAY
ROCKFORD, IL 61107 (US)

(73) Assignee: **PACIFIC BEARING COMPANY**, Rockford, IL (US)

(21) Appl. No.: **12/625,171**

(22) Filed: **Nov. 24, 2009**

Related U.S. Application Data

(60) Provisional application No. 61/117,878, filed on Nov. 25, 2008.

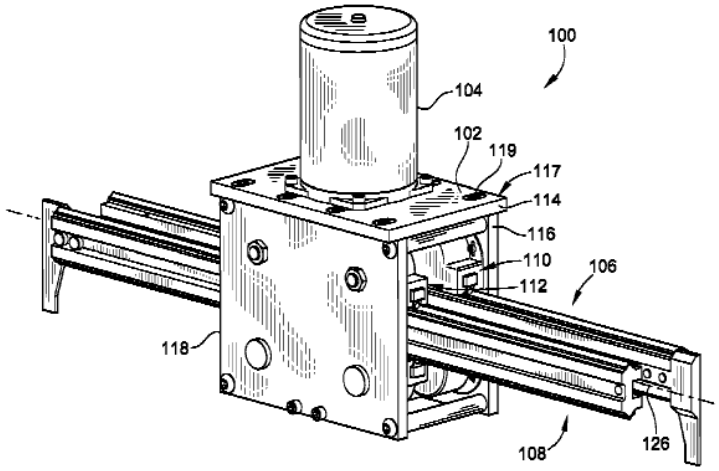
Publication Classification

(51) **Int. Cl.**
E05F 17/00 (2006.01)
E05F 15/14 (2006.01)
E06B 3/38 (2006.01)

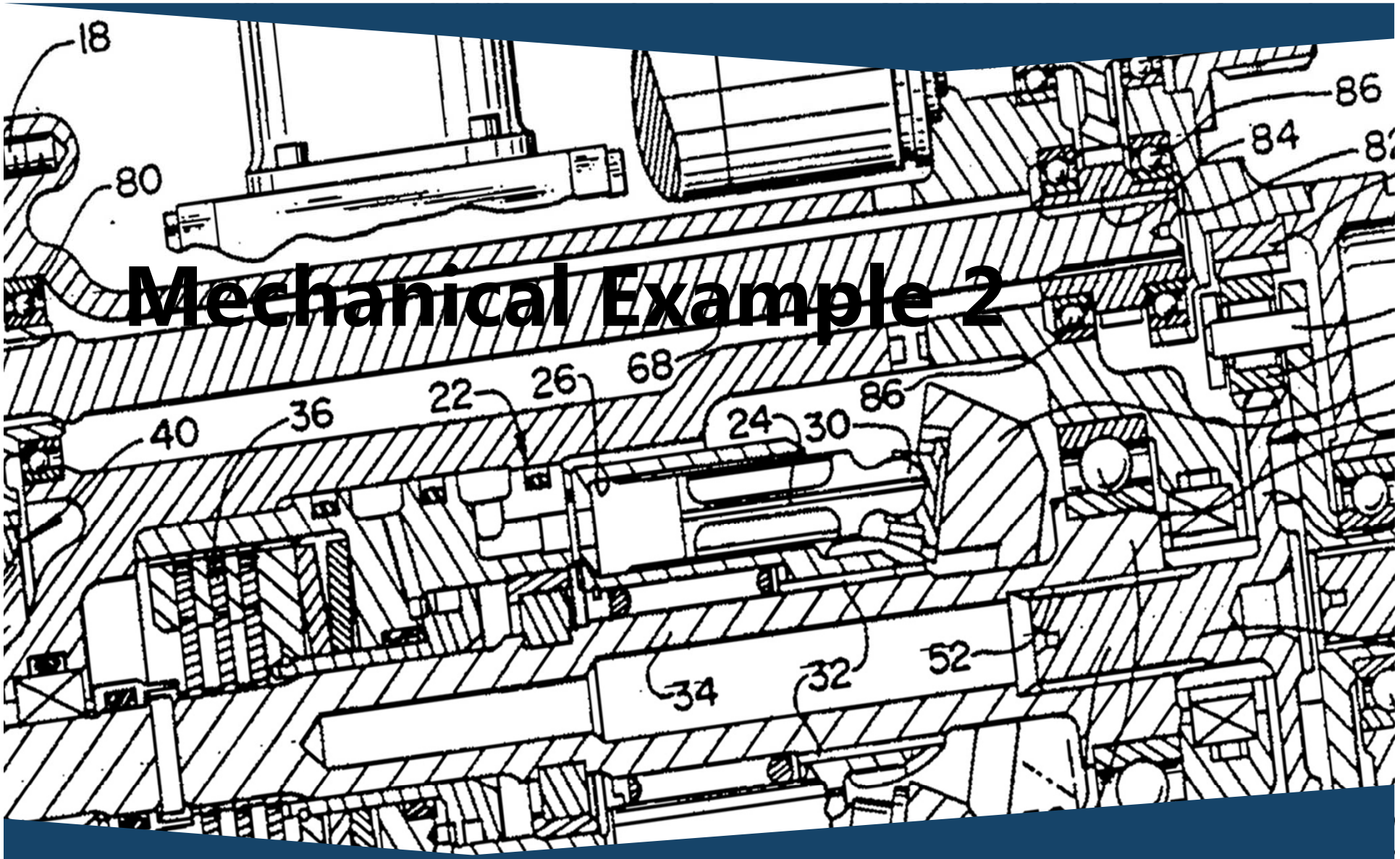
(52) **U.S. Cl.** **49/118**; 49/360; 49/506

(57) **ABSTRACT**

A double door actuation system is provided. The actuation system includes a base frame, a drive motor, first and second guide rails and a pair of rail support arrangements. The drive motor is mounted to the base frame and includes a pinion gear rotatable about an axis of rotation. The guide rails include opposed raceways and a gear rack. The gear rack engages the pinion gear opposite sides such that the pinion gear simultaneously drives the guide rails in opposite directions parallel to a drive axis. The rail support arrangements are mounted to the base frame and support guide rails. The rail support arrangements maintain a substantially constant lateral location of the guide rails in a direction perpendicular to both the drive axis and axis of rotation to maintain a substantially constant mesh between the pinion the gear racks.

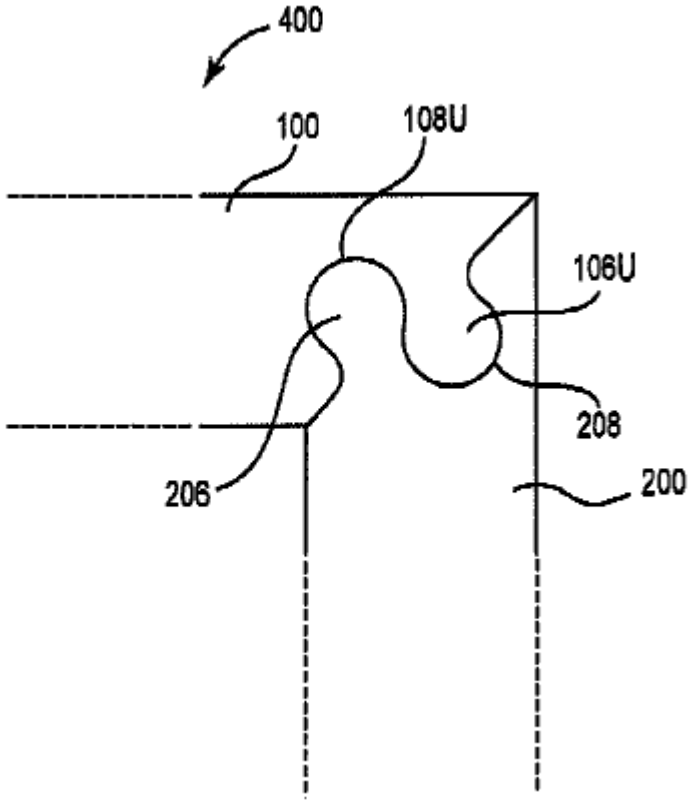


Mechanical Example 2



UNITED STATES
PATENT AND TRADEMARK OFFICE
uspto

The invention provides a method for providing improved and locking joints in window and door casings. Complementary geometric shapes are provided on each adjacent joint member to provide locking engagement thereof. This locking engagement helps prevent the gaps that typically result in known 45 degree miter joints as a result of expansion and contraction due to water uptake and release.



US 2011/0185654

What is claimed is:

1. A casing structure, the structure comprising:

a upper horizontal member comprising a right side and a left side, the right side comprising at least one male engager having a geometry and at least one female engaging surface having a geometry, the left side comprising at least one male engager having a geometry and at least one female engager having a geometry;

a right vertical member comprising an upper section and a lower section and at least one male engager and at least one female engager on at least the upper section, the at least one male engager having a geometry that is complementary with the geometry of the right side female engaging surface of the upper horizontal member, the at least one female engaging surface having a geometry that is complementary with the geometry of the right side male engager of the upper horizontal member; and

a left vertical member comprising an upper section and a lower section and at least one male engager and at least one female engager on at least the upper section at least one male engager and at least one female engager, the at least one male engager having a geometry that is complementary with the geometry of the left side female engaging surface of the upper horizontal member, the at least one female engaging surface having a geometry that is complementary with the geometry of the left side male engager of the upper horizontal member.

13. A method for providing locking joints in a casing structure, comprising:

providing a upper horizontal member comprising a right side and a left side, the right side comprising at least one male engager having a geometry and at least one female engaging surface having a geometry, the left side comprising at least one male engager having a geometry and at least one female engager having a geometry;

providing a right vertical member comprising an upper section and a lower section and at least one male engager and at least one female engager on at least the upper section, the at least one male engager having a geometry that is complementary with the geometry of the right side female engaging surface of the upper horizontal member, the at least one female engaging surface having a geometry that is complementary with the geometry of the right side male engager of the upper horizontal member;

providing a left vertical member comprising an upper section and a lower section and at least one male engager and at least one female engager on at least the upper section at least one male engager and at least one female engager, the at least one male engager having a geometry that is complementary with the geometry of the left side female engaging surface of the upper horizontal member, the at least one female engaging surface having a geometry that is complementary with the geometry of the left side male engager of the upper horizontal member;

lockingly engaging the at the at least one male engager of the lower portion of the right vertical member with the at least one female engaging surface of the left side of the lower horizontal member;

lockingly engaging the at least one female engaging surface of the lower portion of the right vertical member with the at least one male engager of the right side of the lower horizontal member;

lockingly engaging the at least one male engager of the lower portion of the left vertical member with the at least one female engaging surface of the left side of the lower horizontal member; and

lockingly engaging the at least one female engaging surface of the lower portion of the left vertical member with the at least one male engager of the left side of the lower horizontal member.

Identify Search Features

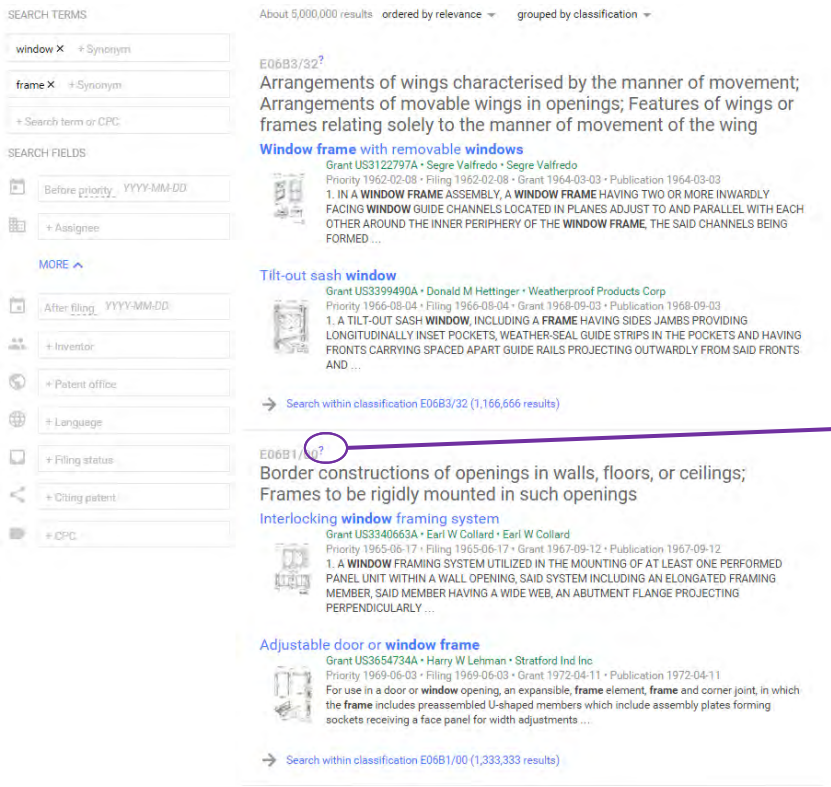
- Window frame
- Corners that lock together to prevent expansion/contraction gaps

Identify Relevant CPC Groups

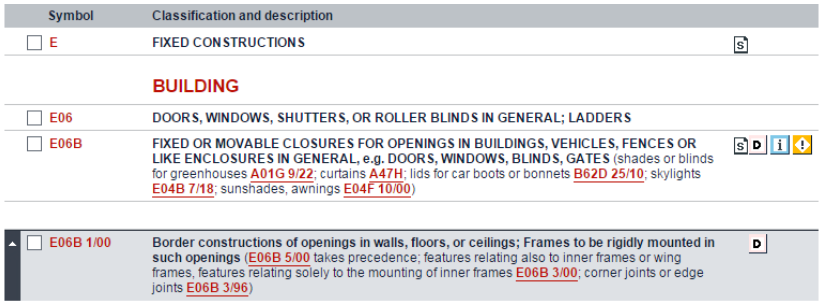
- Using Google Patents (patents.google.com)

Google Patents can be a good place to start if you aren't sure where to look.

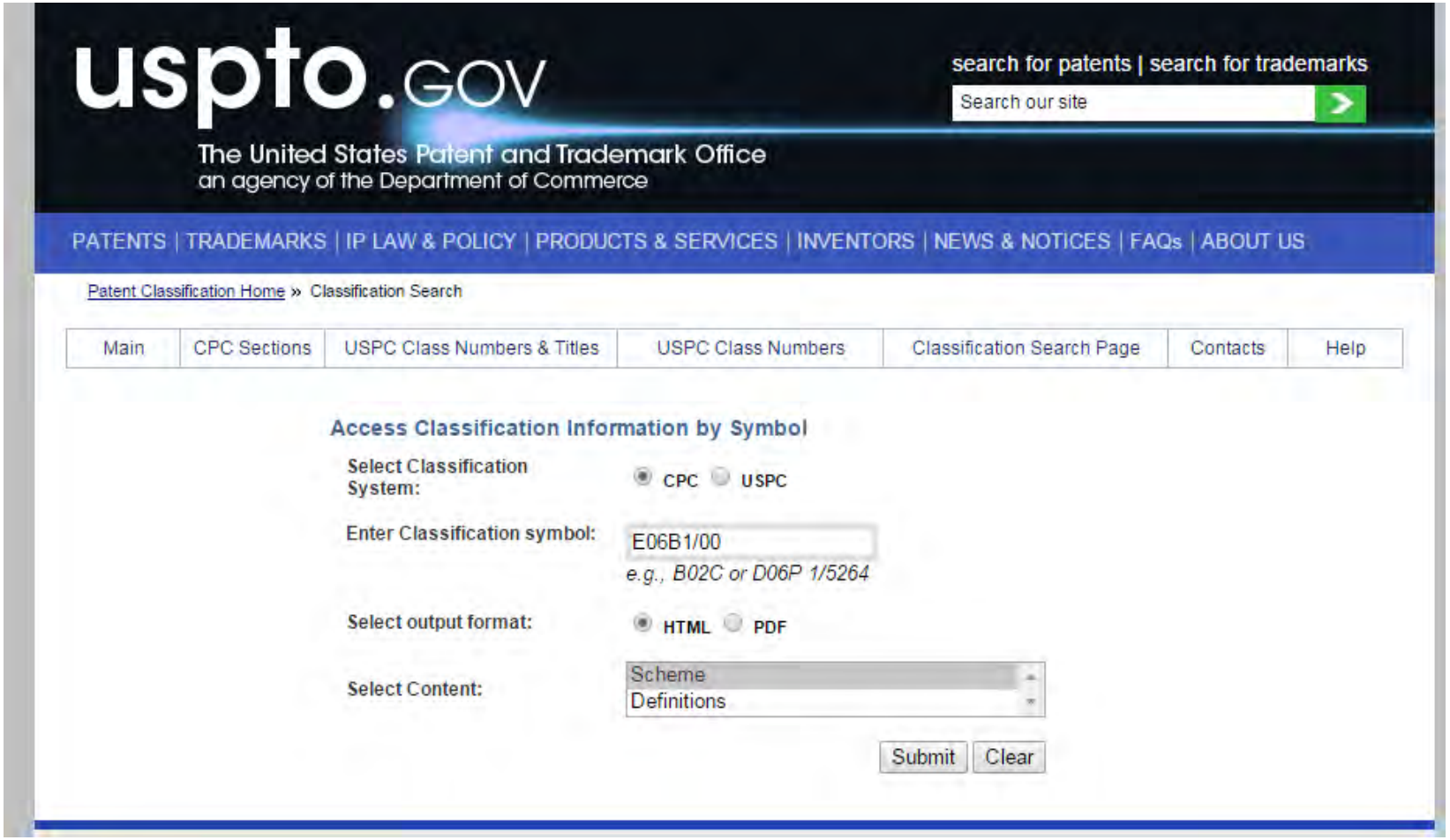
Identify Relevant CPC Groups



Clicking the '?' opens the CPC scheme



Identify Relevant CPC Groups



Determine relevant CPC schemes

– Window frame

E06B 1/04 . Frames for doors, windows, or the like to be fixed in openings ({of curvilinear outline E06B 1/006; } special adaptations for fixing in base frames E06B 1/02; features relating solely to the mounting of glass panes or other sheets E06B 3/00)

– Corners that lock together to prevent expansion/contraction gaps

E06B 1/62 . Tightening or covering joints between the border of openings and the frame {or between contiguous frames} (E06B 1/34 takes precedence)

Note the precedence reference

~~E06B 1/34 . . Coverings, e.g. protecting against weather, for decorative purposes~~

Formulate various search strategies

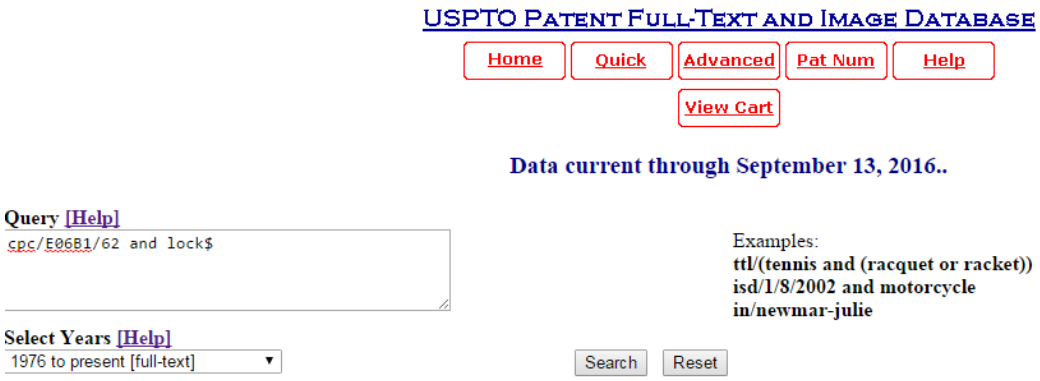
- Can search with classification symbols only
  - E06B1/04
  - E06B1/04 and E06B1/62
- Can search with keywords only
  - Window and frame and joint and lock$ and engag$
- Can search with both symbols and keywords
  - E06B1/62 AND lock$

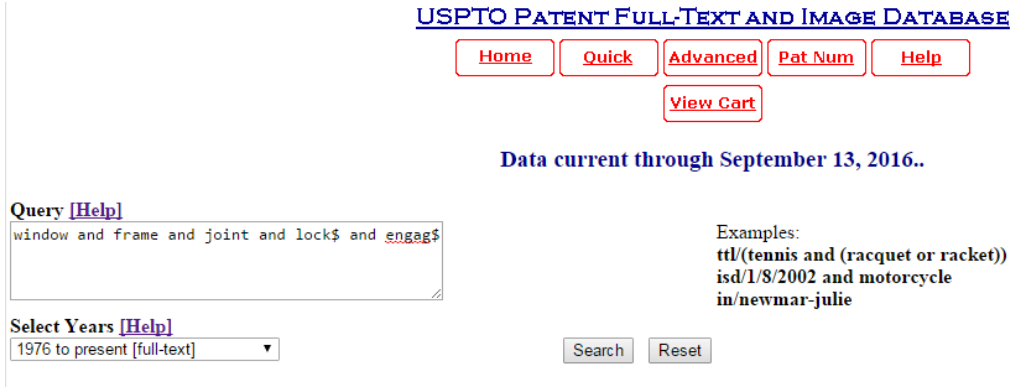
Search in EAST

- Formulate various search strategies
  - Can search with classification symbols only
    - E06B1/04.cpci.
    - E06B1/04.cpci. AND E06B1/62.cpci.
  - Can search with keywords only
    - Window ADJ frame AND (joint? SAME lock$3) AND engag$4
  - Can search with both symbols and keywords
    - E06B1/62.cpci. AND lock$3

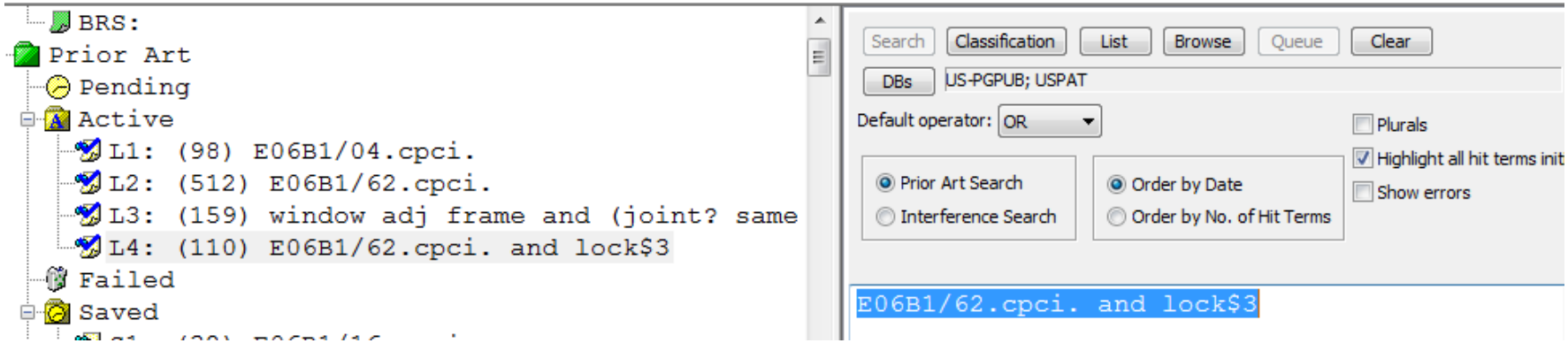
Perform Search (Patft.uspto.gov)

How to use the advanced search : http://patft.uspto.gov/netahtml/PTO/help/helpadv.htm





EAST Results



Review Search and Strategy

- If you did not find what you are looking for, you may need to broaden your search, or modify your strategy
  - Change keywords
  - Move to broader subgroups
  - Search additional subgroups

What If You Don't Find It?

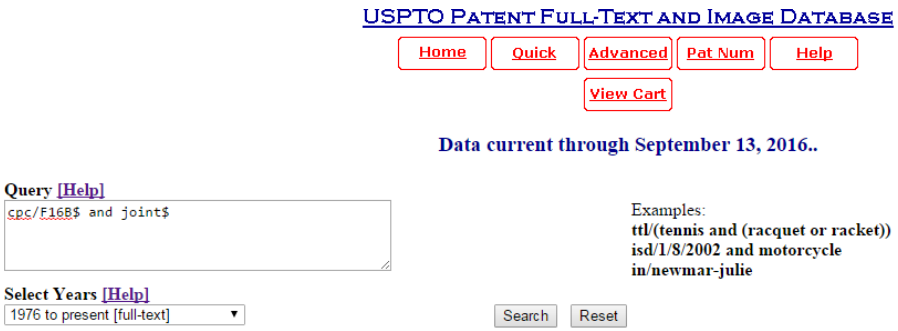
- Expand search to other areas
  - If searching application areas, try the function oriented area
    - E06B1/+ is application oriented
    - F16B is function oriented

F16B **DEVICES FOR FASTENING OR SECURING CONSTRUCTIONAL ELEMENTS OR MACHINE PARTS TOGETHER, e.g. NAILS, BOLTS, CIRCLIPS, CLAMPS, CLIPS, WEDGES, JOINTS OR JOINTING**

    - E06B only contains windows, doors, etc.... F16B contains all kinds of joints, but may be relevant to windows and doors.

Expand Search

PatFT:



Espacenet:

EAST:

F16B$.cpc. and joint?

F16B$.cpc. and E06B1/$.cpc.

Evaluate Results

United States Patent [19]
Mackenroth

[11] **4,099,887**
[45] **Jul. 11, 1978**

[54] **STRUCTURAL JOINTS**

[76] Inventor: **Einhard Mackenroth**, Lower Salem La., South Salem, N.Y. 10590

[21] Appl. No.: **816,391**

[22] Filed: **Jul. 18, 1977**

[51] **Int. Cl.**[2] **F16D 1/00; F16L 25/00**
[52] **U.S. Cl.** **403/4**; 403/331; 403/381; 40/155; 46/28; 52/574; D6/242; D6/246
[58] **Field of Search** 403/3, 4, 331, 381, 403/354, 364, 401; 52/574, 594; 46/25, 28; 40/155; D6/242, 246

[56] **References Cited**

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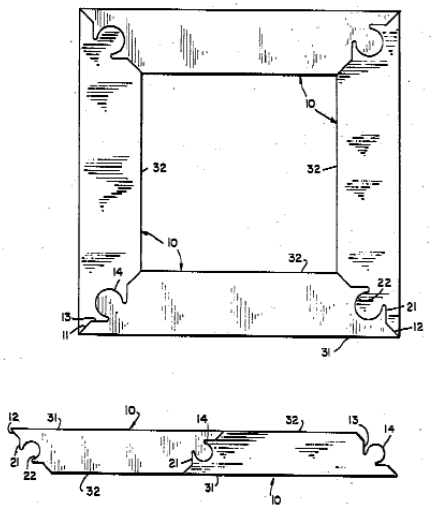
3,992,834	9/1976	Valenzano	52/594 X

Primary Examiner—Wayne L. Shedd
Attorney, Agent, or Firm—Marn & Jangarathis

[57] **ABSTRACT**

A first structural member having a portion beveled at an angle of 45° which includes a mortise in the form of a generally cylindrical groove is joined to a second structural member having a portion beveled at an angle of 45° which includes a tenon in the form of a generally cylindrical rib, with the beveled portions in an abutting relationship by a joint formed by the rib being snugly fitted in the groove. The members may be joined at a straight angle or at a right angle, and may be employed for producing modular structural frames; articles of furniture; modular toy constructions; wall attachments; flooring boards and other arrangements wherein the flexibility of straight angle and right angle permutations of interlocking members of standardized elongated configurations are utilized.

6 Claims, 2 Drawing Figures



US007818939B2

(12) **United States Patent**
Bearinger et al.

(10) **Patent No.: US 7,818,939 B2**
(45) **Date of Patent: Oct. 26, 2010**

(54) **SNAP LOCK JOINT**

(76) Inventors: **Irvin Bearinger**, 6439 Peel Road 6, Wallenstein, Ontario (CA) N0B 2S0; **Joshua Brubacher**, 341 Hill Street, West Montrose, ON (CA) N0B 2V0

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 424 days.

(21) Appl. No.: **11/810,041**

(22) Filed: **Jun. 5, 2007**

(65) **Prior Publication Data**

US 2008/0302051 A1 Dec. 11, 2008

(51) **Int. Cl.**
E04B 1/38 (2006.01)

(52) **U.S. Cl.** **52/591.1**; 52/590.1; 52/745.2; 144/354; 403/381

(58) **Field of Classification Search** 52/589.1, 52/590.1, 590.2, 591.1, 591.3, 591.4, 592.1, 52/592.2, 588.1, 745.2; 403/345, 364, 381, 403/DIG. 10, 252, 255, 264, 331; 144/344–347, 144/354

See application file for complete search history.

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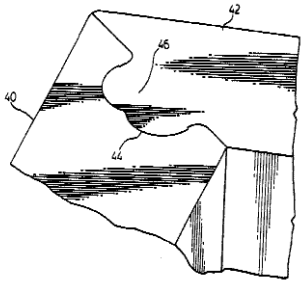
Primary Examiner—Robert J Canfield
(74) *Attorney, Agent, or Firm*—E. H. Oldham

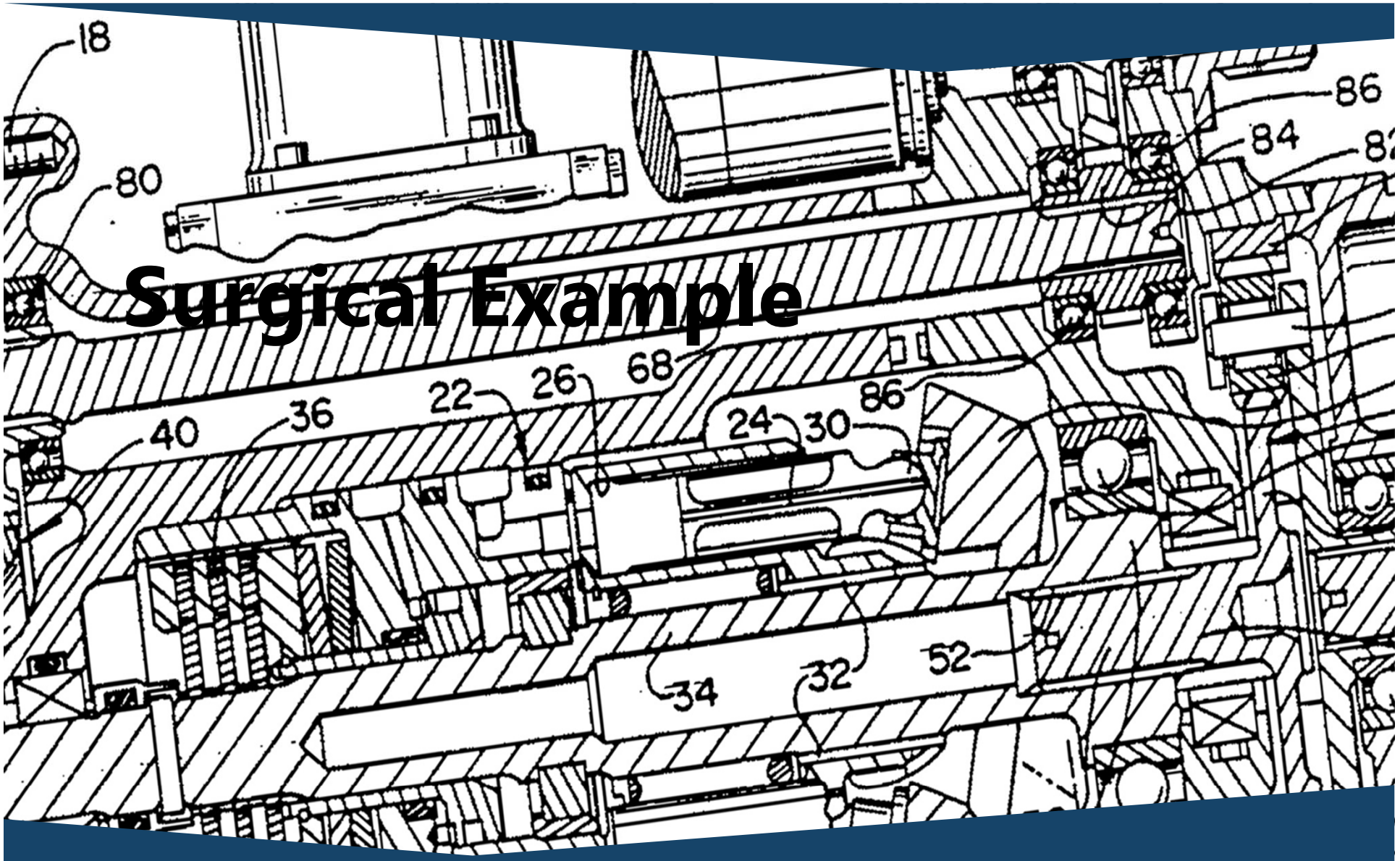
(57) **ABSTRACT**

This invention describes a snap-lock interlocking joint which locks a pair of mating construction pieces together by the insertion of a specially shaped tongue into a corresponding groove (having a complimentary shape to the tongue). The invention works well with engineered wood composites such as medium density fiberboard and certain other plastic products, namely free foam cellular plastic. The pieces may be joined together in the complete absence of glue or nails. No clamping is required to provide a strong joint.

2 Claims, 3 Drawing Sheets



Surgical Example



UNITED STATES
PATENT AND TRADEMARK OFFICE
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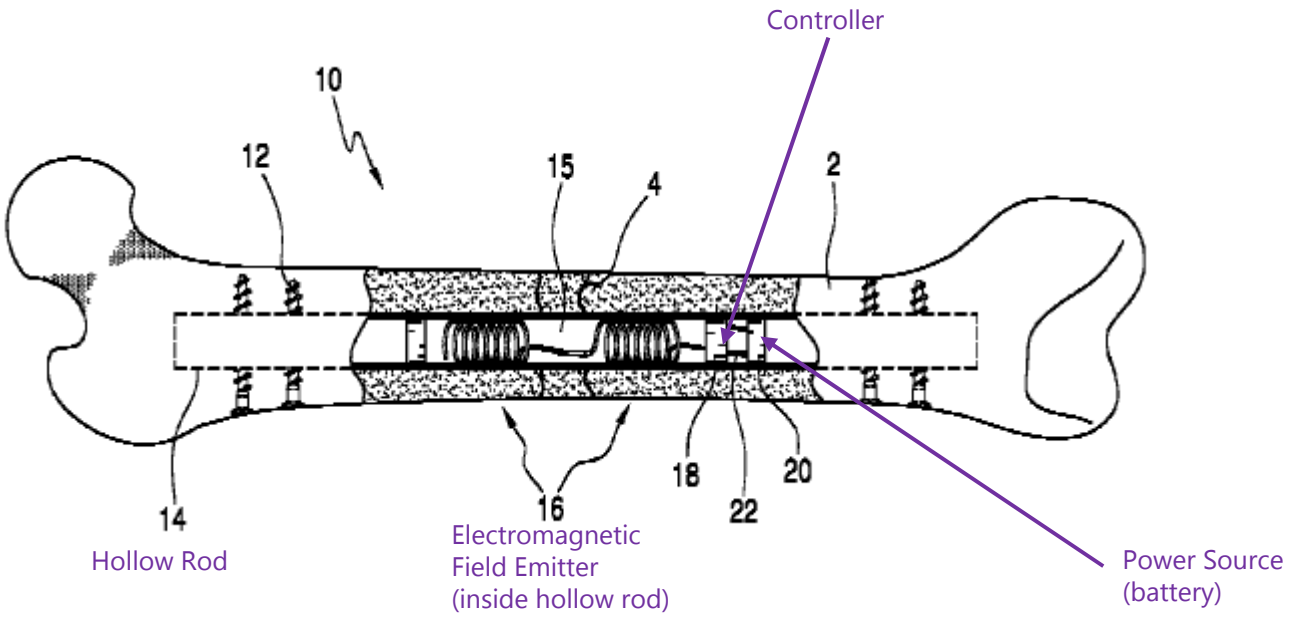
A medical device includes an orthopedic fixation device and an electromagnetic field emitter carried by the fixation device. The device preferably further includes a power source for powering the electromagnetic field emitter, which may be implanted in the human body with the fixation device and the electromagnetic field emitter. The power source may be a battery.

[0025] The invention relates generally to fixation devices. More specifically, the invention relates to fixation devices that are useful for assisting in fracture and wound healing, treating infection, reducing pain, and for other therapeutic purposes.



US 2013/0165733

1. An orthopedic device comprising:
an internal orthopedic fixation device; and
a magnetic field emitter carried by the fixation device.

14. A method of treating an injury comprising:
placing an orthopedic fixation device in a patient;
placing an electromagnetic field emitter carried by the device into the patient; and
activating the electromagnetic field emitter to emit an electromagnetic field proximate the injury.

20. A device for stabilizing a fracture and promoting healing, comprising:
an intramedullary orthopedic fixation device having an opening therein;
an electromagnetic field emitter disposed in the opening of the orthopedic fixation device;
a controller disposed in the opening of the orthopedic fixation device and communicating with the electromagnetic field emitter to control the field emitted by the electromagnetic field emitter; and
a power source providing power to the controller and the electromagnetic field emitter.

Identify Search Features

Document Number					
Search Features	Search Concept #1	Search Concept #2	Search Concept #3	Search Concept #4	Relevance of Results?
1)Intramedullary fixation device					
	Result:	Result:	Result:	Result:	
2)Electromagnetic field emitter with controller and power supply					
	Result:	Result:	Result:	Result:	
3)Pain reduction					
	Result:	Result:	Result:	Result:	
4)					
	Result:	Result:	Result:	Result:	
5)					
	Result:	Result:	Result:	Result:	

Determine Relevant CPC Schemes

– Intramedullary device

A61B **DIAGNOSIS; SURGERY; IDENTIFICATION** (analysing biological material G01N, e.g. G01N 33/48; obtaining records using waves other than optical waves, in general G03B 42/00)

A61B 17/00 **Surgical instruments, devices or methods, e.g. tourniquets** (A61B 18/00 takes precedence; contraceptive devices, pessaries, or applicators therefor A61F 6/00; eye surgery A61F 9/007; ear surgery A61F 11/00)

– Electromagnetic Field Emitter

A61N 2/02 . using magnetic fields produced by coils, including single turn loops or electromagnets (A61N 2/12 takes precedence)

~~A61N 2/12 . using variable magnetic fields obtained by mechanical movement~~

Note the precedence reference

– Pain Reduction

A61N 2/002 . {in combination with another treatment}

A61N 2/008 . . {for pain treatment or analgesia}

Because we have a bone fixation device in combination with magnetotherapy

Searching Narrow and Broad Areas

- It is possible to search a narrow area combined with a broad area, and can be advantageous to do so
  - Search results will only be as broad as the narrowest area in the query.
  - This can save time, and also assist when you need to search for a feature outside of a familiar or commonly searched area.

Searching Narrow and Broad Areas

- Searching A61N2/008 combined with all of A61B at once:

Searching US Patent Collection...

Results of Search in US Patent Collection db for:
CPC/A61N2/008: 155 patents.
*Hits **1** through **50** out of **155***

Results of Search in US Patent Collection db for:
CPC/A61B$: 147774 patents.
*Hits **1** through **50** out of **147774***

Results of Search in US Patent Collection db for:
(CPC/A61N2/008 AND CPC/A61B$): 29 patents.
*Hits **1** through **29** out of **29***

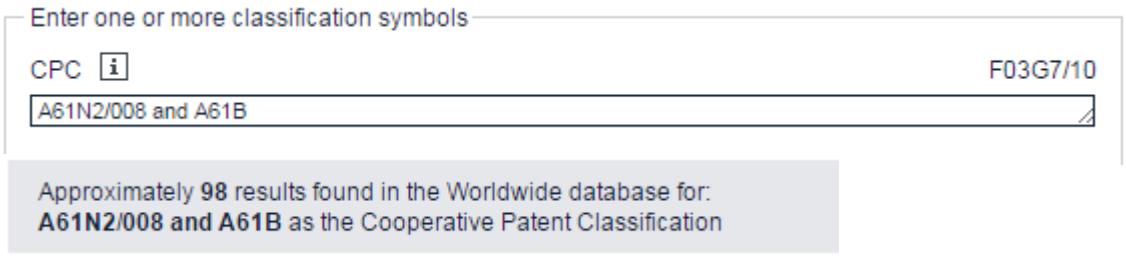
Searching Narrow and Broad Areas

- The same technique can be used to broadly search two areas

Results of Search in US Patent Collection db for:
(CPC/A61N2/$ AND CPC/A61B$): 311 patents.
*Hits **1** through **50** out of **311***

- Can also be done in Espacenet

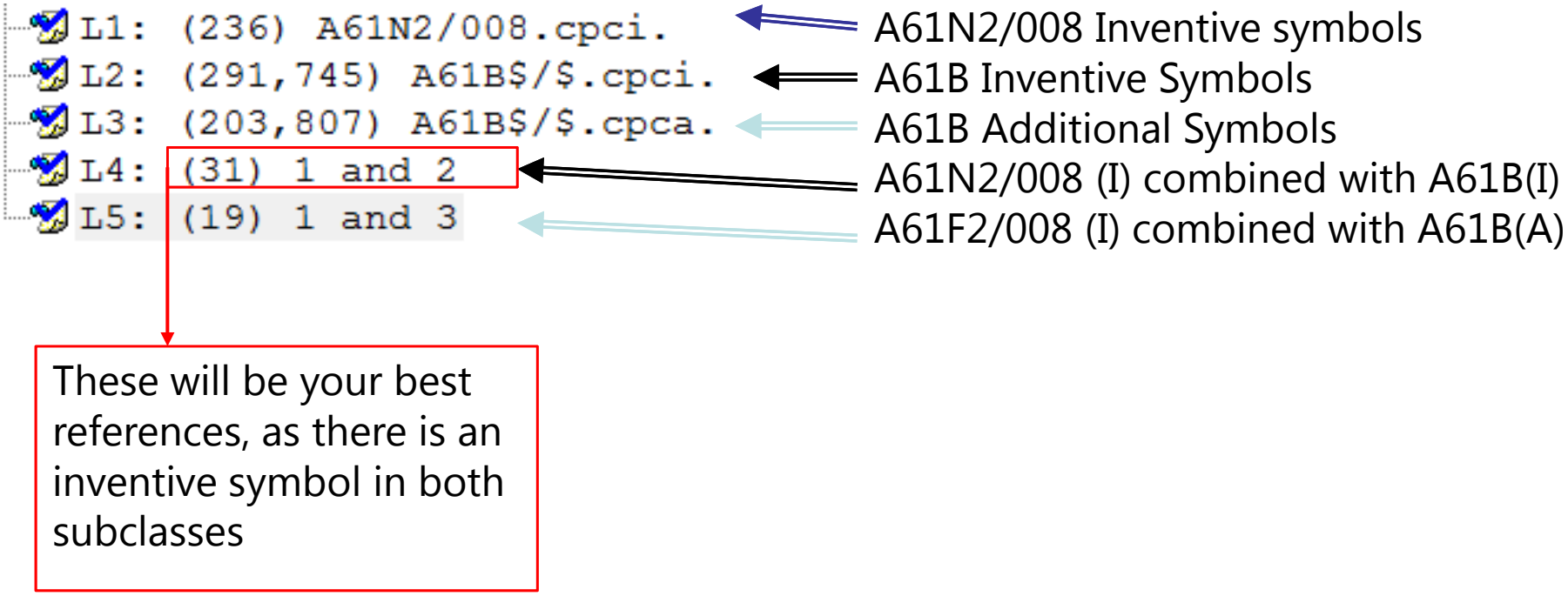
  For example:



Searching Narrow and Broad Areas

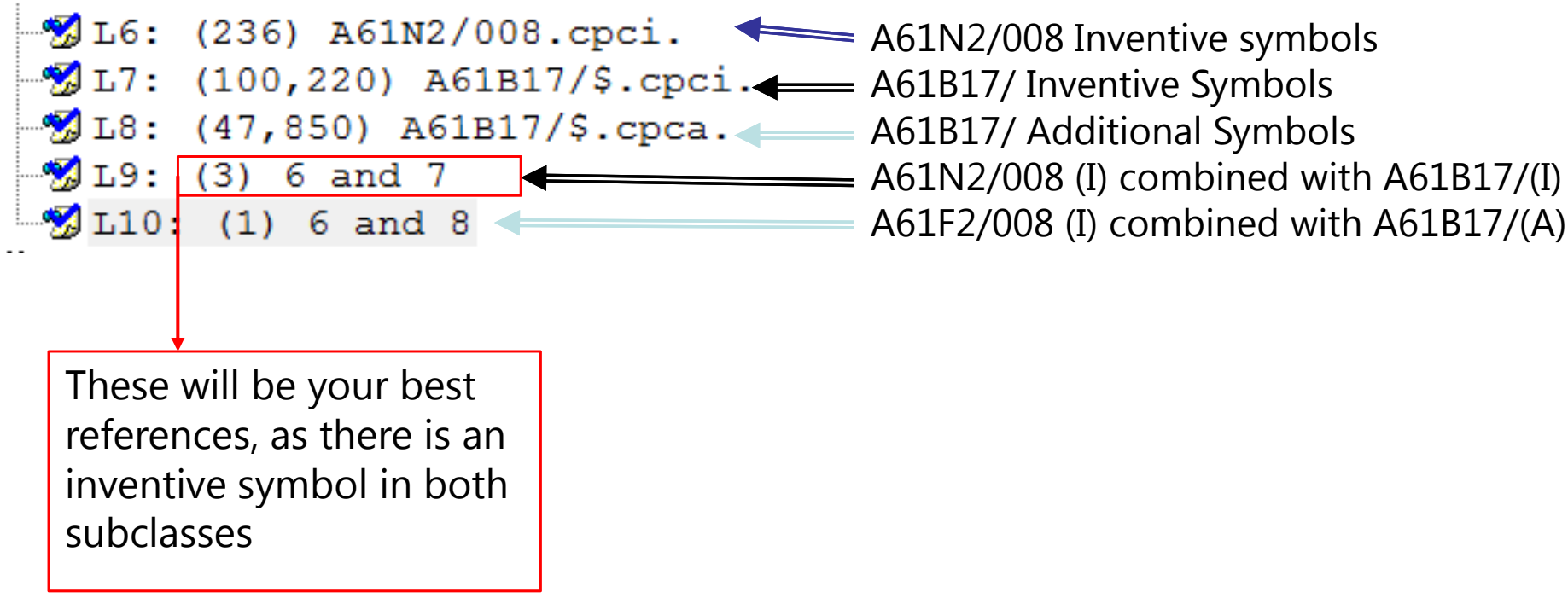
Can also be done in EAST:

- Searching A61N2/008 combined with all of A61B at once:



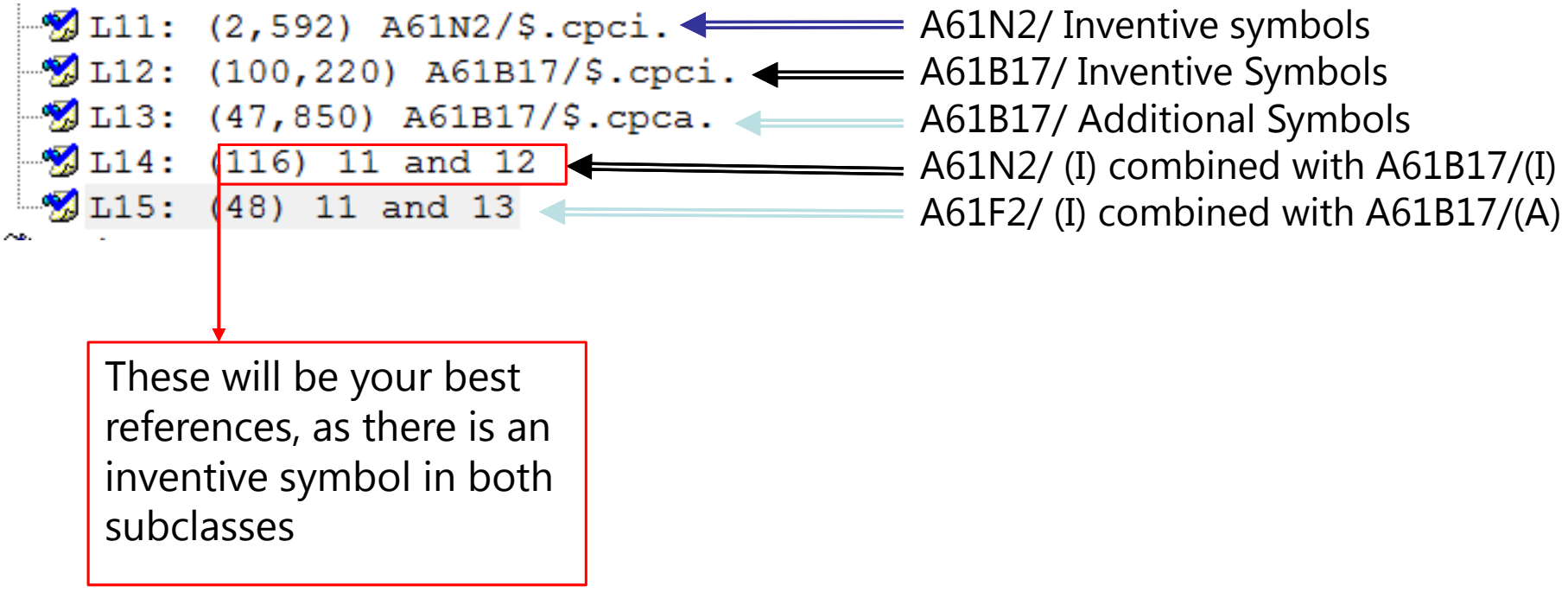
Searching Narrow and Broad Areas

- Searching A61N2/008 combined with all of A61B17/ at once:



Searching Narrow and Broad Areas

- The same technique can be used to broadly search two areas



Evaluate Results

United States Patent [19]
Kraus

[11] **3,915,151**
[45] **Oct. 28, 1975**

[54] **APPARATUS FOR PROMOTING HEALING PROCESSES**

[76] Inventor: **Werner Kraus**, 31 Bauerstrasse, Munich, Germany

[22] Filed: **Mar. 25, 1974**

[21] Appl. No.: **454,557**

[30] **Foreign Application Priority Data**
Mar. 23, 1973 Germany 2314573

[52] **U.S. Cl.** ..... **128/1.5**; 128/82.1; 128/419 F; 128/419 R

[51] **Int. Cl.²** **A61N 1/42**

[58] **Field of Search** ..... 128/1.5, 404, 405, 411, 128/419 PF, 419 R, 420 A, 421, 422, 423, 82.1, 1 C

[56] **References Cited**

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Primary Examiner—William E. Kamm
Attorney, Agent, or Firm—Spencer & Kaye

[57] **ABSTRACT**

An apparatus for promoting healing of body tissue composed of a coil arranged to be applied to the affected body part and to be connected to a low frequency a.c. source to produce a magnetic field within the region to be treated, and at least two sheet-like electrodes associated with the coil and spaced from one another, the electrodes being arranged to be located at respectively opposite sides of the region to be treated and to be connected to a source of a low frequency voltage to produce an electric field within the region to be treated at the same time as the magnetic field.

5 Claims, 7 Drawing Figures

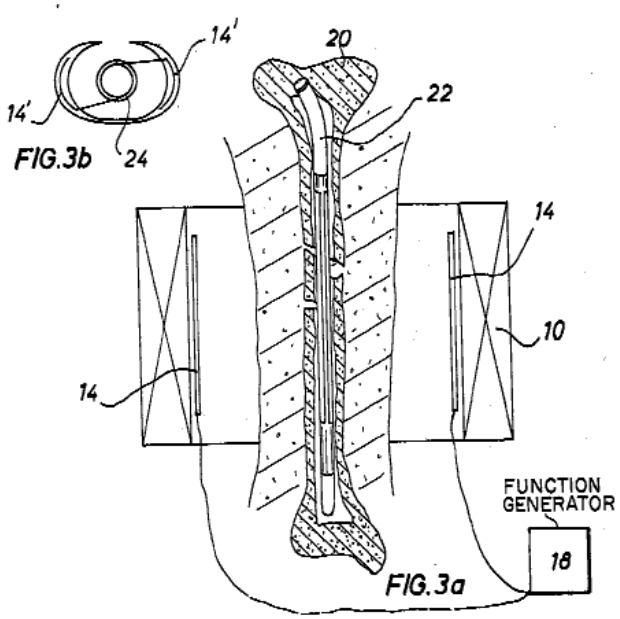
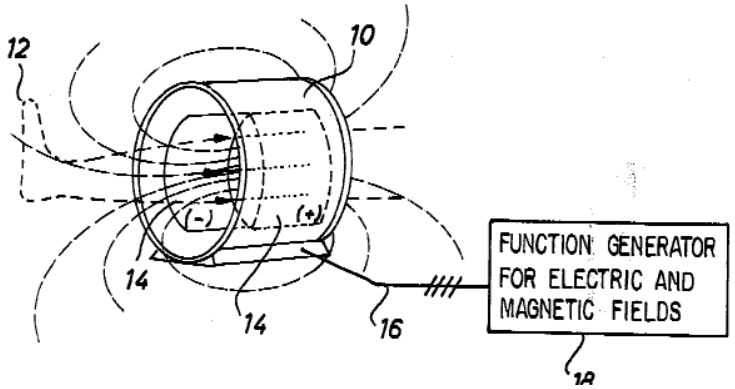


FIG.3b

FIG.3a



The marrow nail **22** described is mounted as is conventional in the injured bone **20** and the injured extremity comprising the marrow nail **22** with the receiving coil **24** is then brought into the field of a coil **10** placed over the injured extremity. The coil **10** is connected with a function generator **18** of the type described with reference to FIG. **1**. The voltage induced by the magnetic field of the coil **10** in the receiving coil **24** passes to the insulated electrodes **14'** so that in the bone zone an electrical field is produced which runs generally perpendicularly to the magnetic field. The coil **10** can, as has been explained with reference to FIG. **1**, additionally be provided with electrodes **14**, which are directly supplied with a voltage by the function generator **18** and this voltage preferably has the same frequency as the AC in the coil **10**, but with respect to this voltage is shifted in amplitude by approximately 90°.

Evaluate Results

United States Patent [19]
Kraus

[11] **3,915,151**
[45] **Oct. 28, 1975**

[54] **APPARATUS FOR PROMOTING HEALING PROCESSES**

[76] Inventor: **Werner Kraus**, 31 Bauerstrasse, Munich, Germany

[22] Filed: **Mar. 25, 1974**

[21] Appl. No.: **454,557**

[30] **Foreign Application Priority Data**
Mar. 23, 1973 Germany 2314573

[52] **U.S. Cl.** ..... **128/1.5**; 128/82.1; 128/419 F; 128/419 R

[51] **Int. Cl.²** **A61N 1/42**

[58] **Field of Search** ..... 128/1.5, 404, 405, 411, 128/419 PF, 419 R, 420 A, 421, 422, 423, 82.1, 1 C

[56] **References Cited**

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1,109,280	6/1961	Germany	128/420

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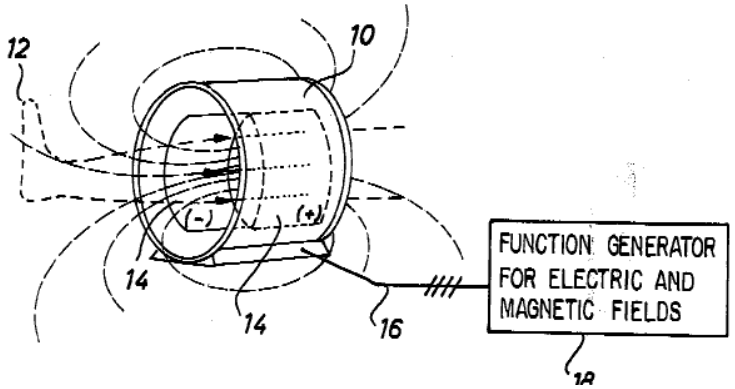
Cochran, "Bulletin of the New York Academy of Medicine" Vol. 48, No. 7, Aug. 1972, pp. 899–911.

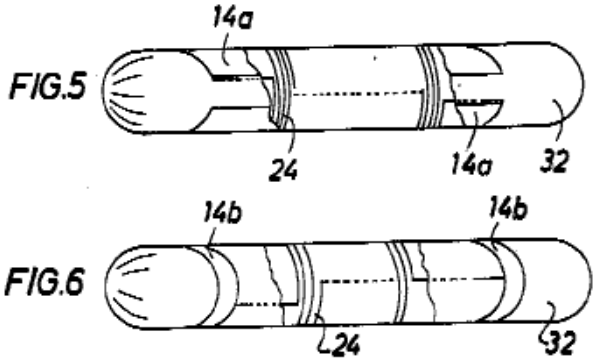
Primary Examiner—William E. Kamm
Attorney, Agent, or Firm—Spencer & Kaye

[57] **ABSTRACT**

An apparatus for promoting healing of body tissue composed of a coil arranged to be applied to the affected body part and to be connected to a low frequency a.c. source to produce a magnetic field within the region to be treated, and at least two sheet-like electrodes associated with the coil and spaced from one another, the electrodes being arranged to be located at respectively opposite sides of the region to be treated and to be connected to a source of a low frequency voltage to produce an electric field within the region to be treated at the same time as the magnetic field.

5 Claims, 7 Drawing Figures





FIGS. 5 and 6 show two embodiments of the present device, which comprise a pin-like body **32** with rounded ends, which can consist of a fluorine carbon polymer for example. In the body there is a substantially cylindrical shaped receiving coil **24** which can comprise a rod-shaped magnetic core which is not especially shown.

The ends of the receiving coil are connected respectively with two electrodes, which are embedded in the body **32**. Preferably the surface of each electrode is insulated so that no galvanic currents can flow from it. The electrodes **24***a* of the embodiment in accordance with FIG. **5** have the shape of parts of the cylindrical casing and are arranged on opposite sides of the body **32**. The electrodes **14***b* of the embodiment in accordance with FIG. **6** are annular and arranged on the body **32** with an axial spacing.

The embodiment in accordance with FIGS. **5** and **6** can be mounted in the marrow channel of a bone, for example in the case of osteomyelitis, and furthermore they are suitable for producing autologous replacement of fibers by growing round or encapsulation.

Evaluate Results

US 20090099404A1

(19) **United States**

(12) **Patent Application Publication**
Kraus et al.

(10) **Pub. No.: US 2009/0099404 A1**
(43) **Pub. Date: Apr. 16, 2009**

(54) **IMPLANTABLE DEVICE, SYSTEM FOR GENERATING LOCALISED ELECTROMAGNETIC FIELDS IN THE AREA OF AN IMPLANT AND COIL ARRANGEMENT**

(75) Inventors: **Werner Kraus**, Munchen (DE); **Stephanie Kraus**, Bad Tolz (DE); **Herlbert Stephan**, Munchen (DE)

Correspondence Address:
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PONTIAC, MI 48342 (US)

(73) Assignee: **Neue Magnetodyn GmbH**, Munchen (DE)

(21) Appl. No.: **12/126,455**

(22) Filed: **May 23, 2008**

(30) **Foreign Application Priority Data**

Oct. 16, 2007 (DE) 102007 049 542.2

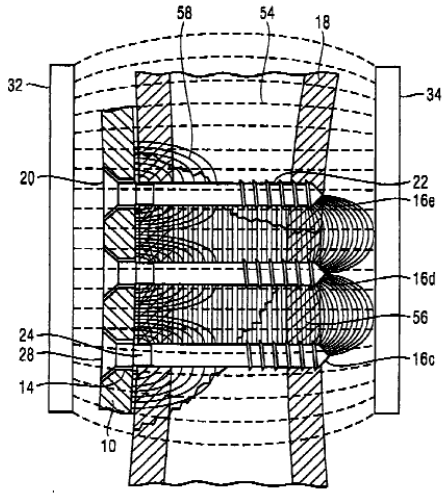
Publication Classification

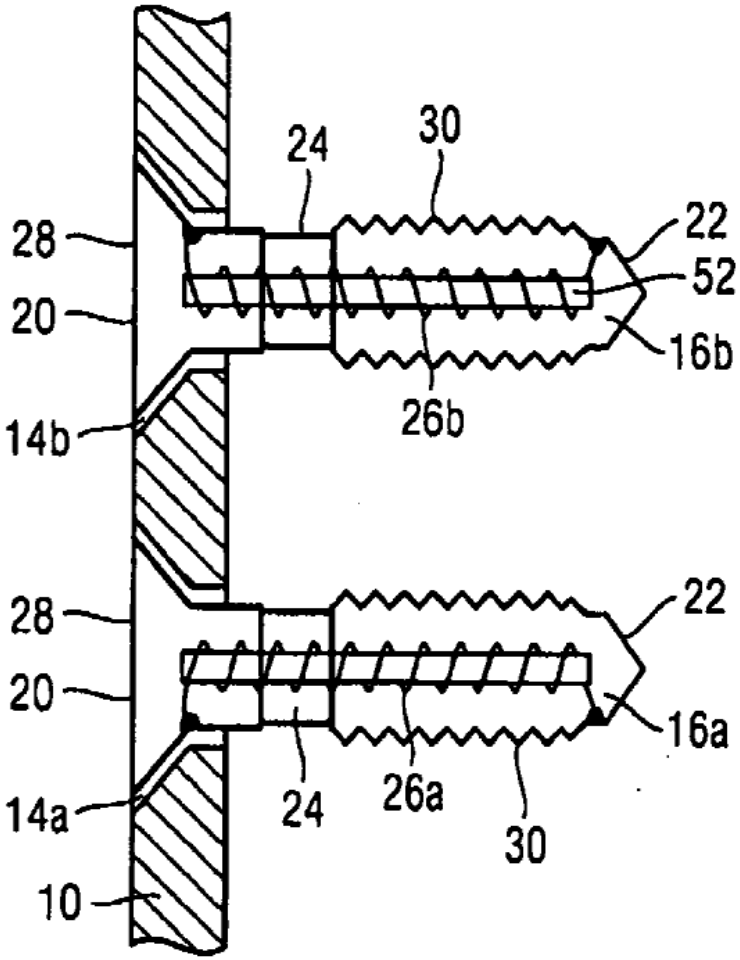
(51) **Int. Cl.**
A61N 2/02 (2006.01)
A61F 2/30 (2006.01)
A61B 17/80 (2006.01)
A61B 17/58 (2006.01)

(52) **U.S. Cl.** **600/13**; 623/18.11; 606/280; 606/60

(57) **ABSTRACT**

The invention relates to an implantable device to be fixed to a bone and comprising an electrically conductive base body provided with at least two through holes and at least one pair of shaft-shaped contact means, wherein each contact means passes through a through hole of the base body and penetrates a section of the bone in an implanted state, wherein the surface of each contact means comprises a first and a second electrically conductive surface section as well as an electrically insulating surface section separating the electrically conductive surface sections from each other, wherein the first electrically conductive surface section electrically contacts the base body while the second electrically conductive surface section is electrically insulated with respect to the base body, wherein each contact means contains a coil arrangement in its interior by means of which the electrically conductive surface sections of each contact means are electrically coupled, and wherein the coil arrangements of a pair are wound in opposite directions.





Evaluate Results

US 20120088953A1

(19) **United States**

(12) **Patent Application Publication**

King

(10) **Pub. No.: US 2012/0088953 A1**

(43) **Pub. Date: Apr. 12, 2012**

(54) **FRACTURED BONE TREATMENT METHODS AND FRACTURED BONE TREATMENT ASSEMBLIES**

(76) Inventor: **Jerry King**, Missoula, MT (US)

(21) Appl. No.: **12/901,167**

(22) Filed: **Oct. 8, 2010**

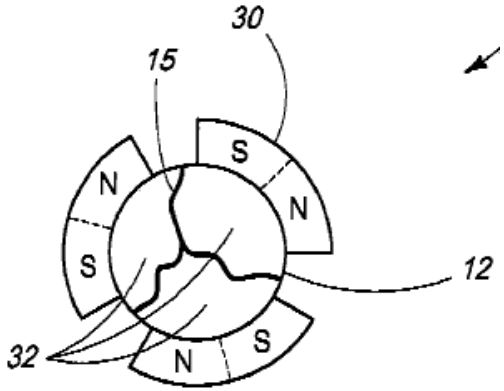
Publication Classification

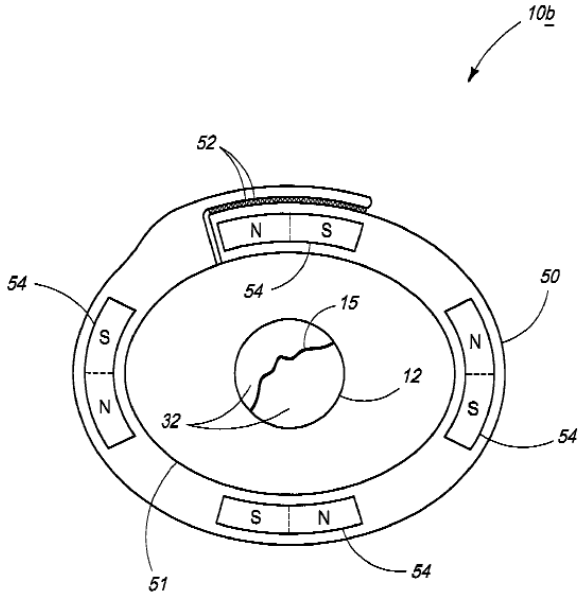
(51) **Int. Cl.**
A61N 2/08 (2006.01)
A61B 17/00 (2006.01)

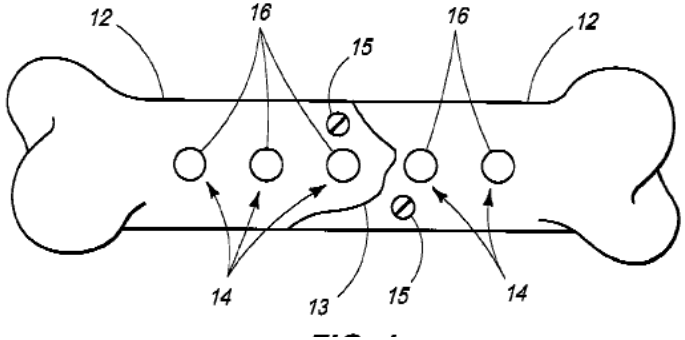
(52) **U.S. Cl.** **600/9**; 606/54

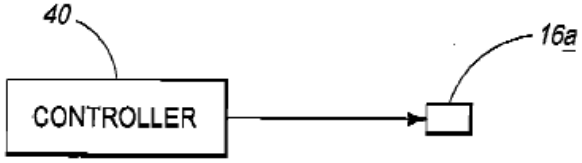
(57) **ABSTRACT**

Fractured bone treatment methods and fractured bone treatment assemblies are described. According to one aspect, a fractured bone treatment method includes generating an attractive magnetic force proximate to a fracture in a fractured bone and maintaining pieces of the fractured bone in proper anatomical positions with respect to one another using the attractive magnetic force.

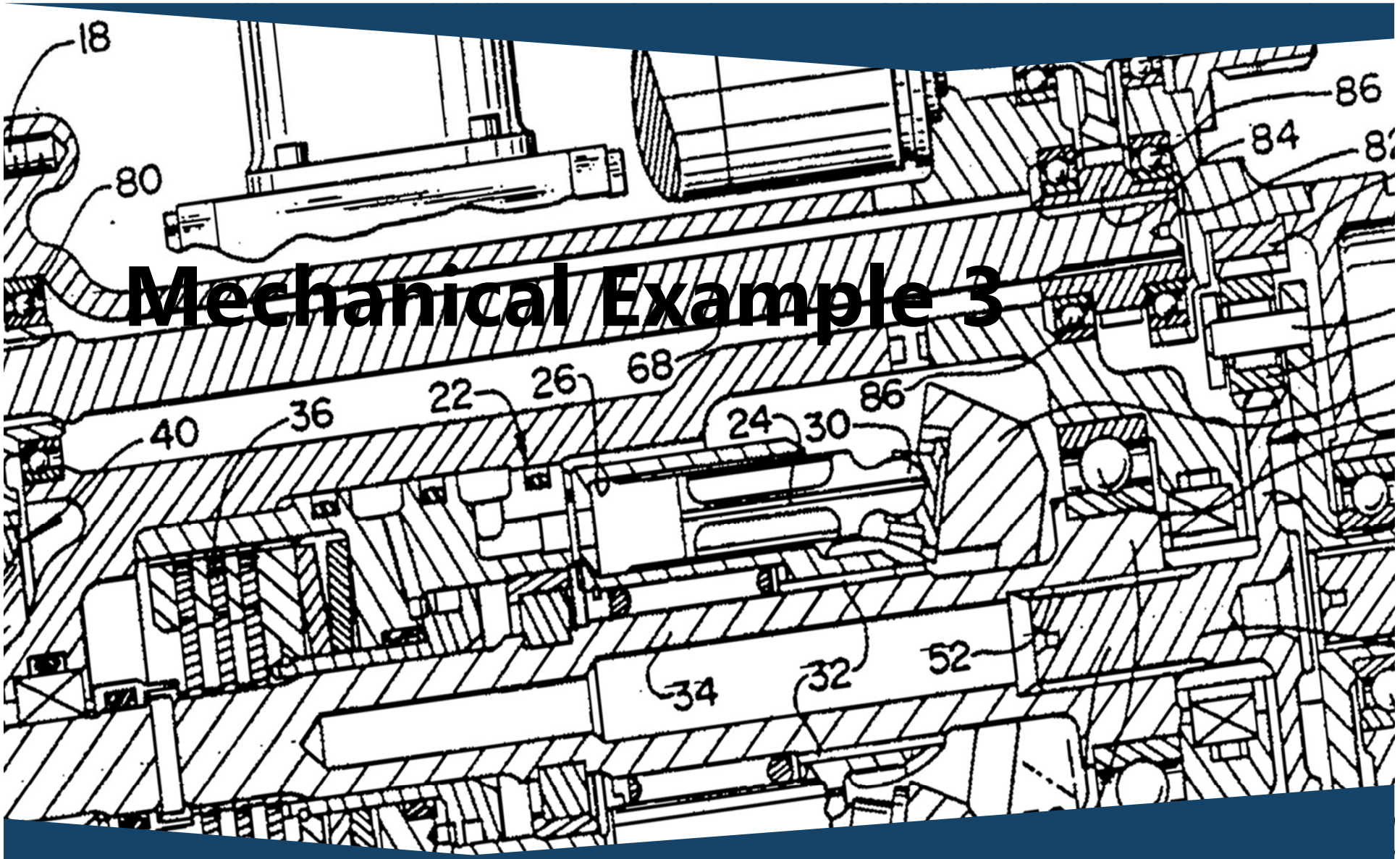








Mechanical Example 3



UNITED STATES
PATENT AND TRADEMARK OFFICE
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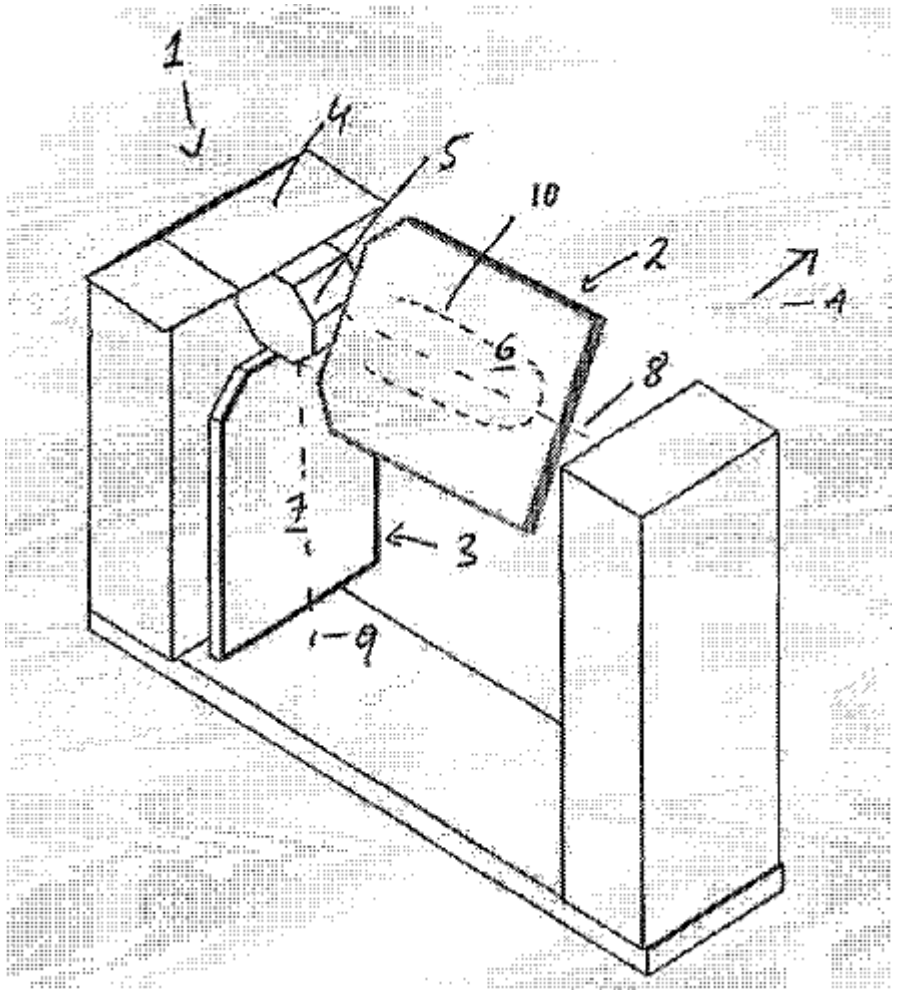
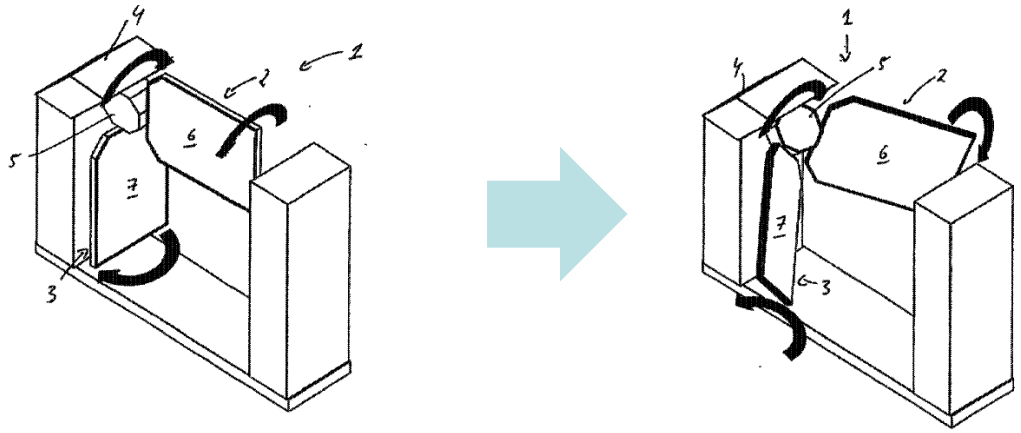
A personnel access-control device in the form of a turnstile (**1**) has one or more blocking arms (**2**, **3**) connected to a main shaft (**5**) mounted in a carrier (**4**). The blocking arms (**2**, **3**) assume a blocking position and at least one free position in dependence upon the rotation of the main shaft (**5**). Each blocking arm (**2**, **3**) includes a flat component (**6**, **7**) that is mounted to rotate about its longitudinal axis (**8**, **9**) in dependence upon the rotation of the main shaft (**5**). In the blocking position of the blocking arms (**2**, **3**), a pre-defined angular position of the flat component (**6**, **7**) with respect to the perpendicular direction is achieved, and in the free position, the flat component (**6**, **7**) is rotated such that passage of a person is allowed and/or that the passage width is not limited.

[0038] In a particularly advantageous embodiment of the invention, it is proposed to integrate at least one RFID antenna unit into the flat components **6**, **7** of the blocking arms **2**, **3** that communicates with RFID transponders as data medium to read an access authorization, whereby the control of at least one antenna unit may be integrated into the flat components **6**, **7**. Such an antenna unit is shown in FIG. **2** with dashed lines, and is identified by index symbol **10**.



US 2014/0096447



1. A personnel access control devices in the form of a turnstile having a stationary carrier and a rotatable gate with at least one blocking arm, said gate being mounted for rotation with respect to the carrier about a main shaft such that the blocking arm is movable between a blocking position which blocks access and at least one free position which allows access, the improvement wherein each blocking arm includes a flat component which is mounted to rotate about a longitudinal arm axis in dependence upon the rotation of the gate about the main shaft such that, in said blocking position, said flat component is rotated to a first defined angle with respect to the vertical to present a barrier to a person and, in said free position, the flat component is rotated such that at least one of (a) a passage of a person is allowed and (b) a passage width is not restricted.

Identify Search Features

Document Number					
Search Features	Search Concept #1	Search Concept #2	Search Concept #3	Search Concept #4	Relevance of Results?
1)					
	Result:	Result:	Result:	Result:	
2)					
	Result:	Result:	Result:	Result:	
3)					
	Result:	Result:	Result:	Result:	
4)					
	Result:	Result:	Result:	Result:	
5)					
	Result:	Result:	Result:	Result:	

Determine relevant CPC schemes

- Turnstile

E06B 11/08 . Turnstiles; {Gates for control of entry or exit of persons, e.g. in supermarkets} (control gates on vehicles B60N 5/00; {bank protection devices E05G 5/00}; with registering means G07C 9/02; {coin-freed facilities for turnstiles G07F 17/14})

- RFID Access

E05F 15/70 . with automatic actuation

E05F 15/76 . . . responsive to devices carried by persons or objects, e.g. magnets or reflectors (E05F 15/77 takes precedence)

G07C 9/02 . Turnstiles with registering means (turnstiles per se E04H; coin-freed aspects G07F)

Evaluate Results

US 20070277439A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0277439 A1**

Ponert et al. (43) **Pub. Date: Dec. 6, 2007**

(54) **ROTATING BARRIER**

(76) Inventors: **Gregor Ponert**, Salsburg (AT); **Thomas Grasmann**, Groding (AT)

Correspondence Address:
FLYNN THIEL BOUTELL & TANIS, P.C.
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KALAMAZOO, MI 49008-1631

(21) Appl. No.: **11/809,380**

(22) Filed: **Jun. 1, 2007**

(30) **Foreign Application Priority Data**

Jun. 6, 2006 (DE) 10 2006 026 221.2

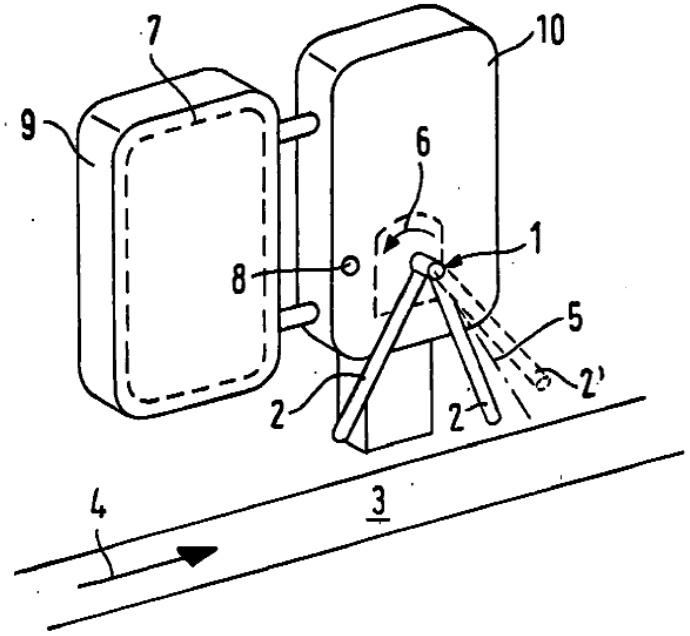
Publication Classification

(51) **Int. Cl.**
E05D 15/02 (2006.01)

(52) **U.S. Cl.** **49/44**; 49/42

(57) **ABSTRACT**

A rotating barrier having a rotating arm assembly (**1**) has at least one blocking arm (**2**) which is formed at least over part of its length by a springy core piece (**14**) and is provided with an outer sheath (**25**).



Electrical Example

UNITED STATES
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(12) **United States Patent**
Weitekamp et al.

(10) **Patent No.: US 9,395,428 B2**
(45) **Date of Patent: Jul. 19, 2016**

(54) **PARTIAL/FRACTIONAL POLARIZATION TRANSFER FOR SINGLE-SCAN MAGNETIC RESONANCE SPECTROSCOPY AND IMAGING**

(75) Inventors: **Daniel P. Weitekamp**, Altadena, CA (US); **Valerie A. Norton**, Santa Barbara, CA (US)

(73) Assignee: **California Institute of Technology**, Pasadena, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1099 days.

(21) Appl. No.: **13/442,577**

(22) Filed: **Apr. 9, 2012**

(65) **Prior Publication Data**

US 2012/0326717 A1 Dec. 27, 2012

Related U.S. Application Data

(60) Provisional application No. 61/473,605, filed on Apr. 8, 2011.

(51) **Int. Cl.**
G01R 33/46 (2006.01)
G01R 33/56 (2006.01)

(52) **U.S. Cl.**
CPC ***G01R 33/4608*** (2013.01); ***G01R 33/5601*** (2013.01); ***G01R 33/5605*** (2013.01)

(58) **Field of Classification Search**
USPC 324/300–322; 600/407–435; 424/9.361
See application file for complete search history.

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2014/0112870	A1 *	4/2014	Waddell	G01R 33/4608 424/9.3
2016/0041241	A1 *	2/2016	Devience	G01R 33/34092 324/309

* cited by examiner

Primary Examiner — Melissa Koval
Assistant Examiner — Tiffany Fetzner
(74) *Attorney, Agent, or Firm* — Kilpatrick Townsend & Stockton LLP

(57) **ABSTRACT**

A method of measuring precessing magnetization includes providing a first site characterized by a first spin order and providing a second site. The method also includes transferring a portion of the first spin order from the first site to the second site. The second site is characterized by a second spin order orthogonal to the first spin order. The method further includes exposing a sample including the first site and the second site to a magnetic field, measuring a precessing magnetization of at least one of the first site or the second site, repeating the transferring a portion of the first spin order from the first site to the second site, and repeating the measuring of the precessing magnetization.

26 Claims, 9 Drawing Sheets

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging

- A method of measuring precessing magnetization includes providing a first site characterized by a first spin order and providing a second site. The method also includes transferring a portion of the first spin order from the first site to the second site. The second site is characterized by a second spin order orthogonal to the first spin order. The method further includes exposing a sample including the first site and a second site to a magnetic field, measuring a precessing magnetization of at least one of the first site or the second site, repeating the transferring a portion of the first spin order from the first site to the second site, and repeating the measuring of the precessing magnetization.

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging
Illustration

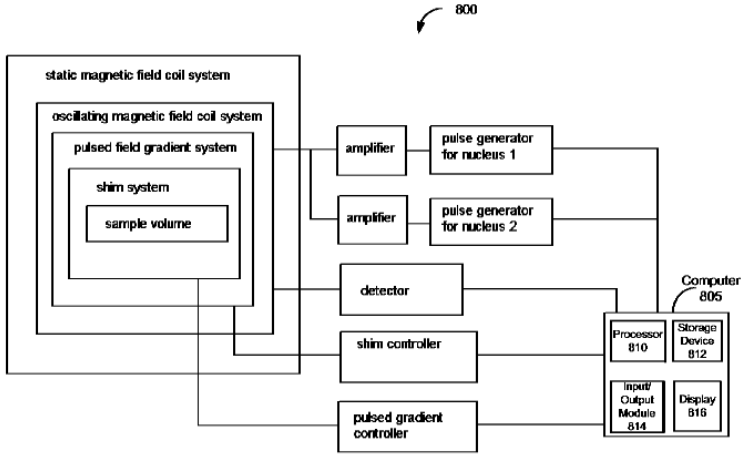


FIG. 8

U.S. Patent Jul. 19, 2016 Sheet 9 of 9 US 9,395,428 B2

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging
Illustration

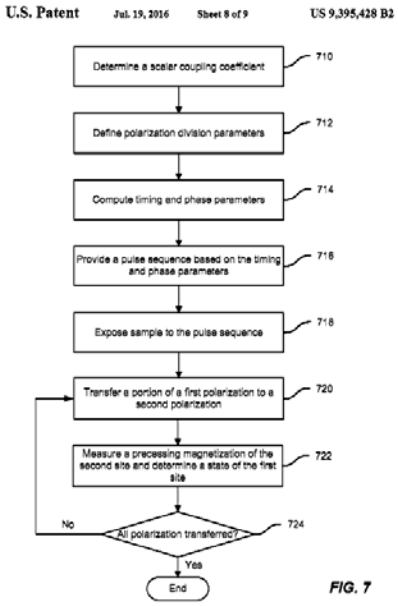
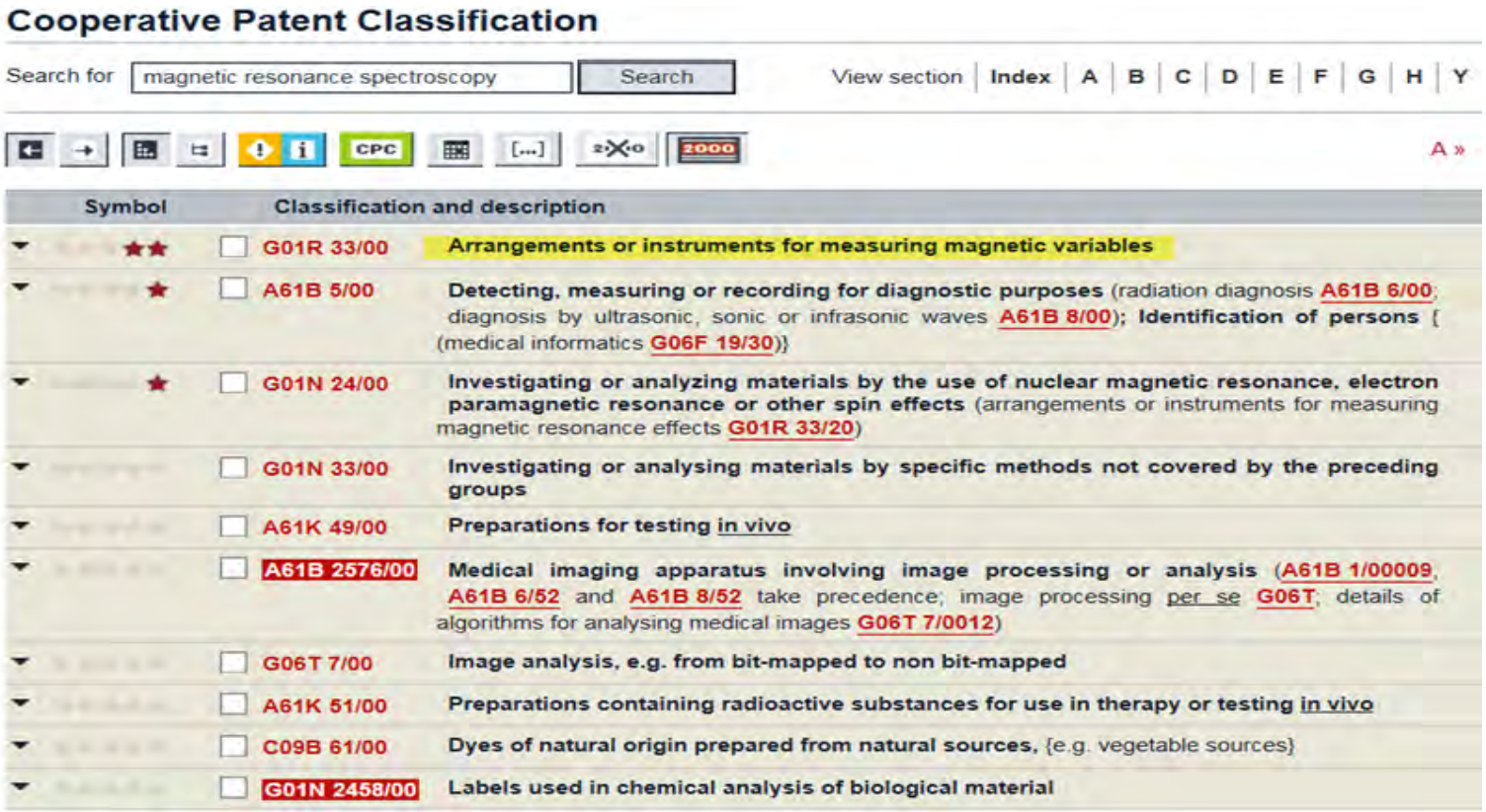


FIG. 7

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Classification



Cooperative Patent Classification

Search for: magnetic resonance spectroscopy [Search]

View section | Index | A | B | C | D | E | F | G | H | Y

A »

Symbol	Classification and description
★★	G01R 33/00 — **Arrangements or instruments for measuring magnetic variables**
★	A61B 5/00 — **Detecting, measuring or recording for diagnostic purposes** (radiation diagnosis A61B 6/00; diagnosis by ultrasonic, sonic or infrasonic waves A61B 8/00); **Identification of persons** {(medical informatics G06F 19/30)}
★	G01N 24/00 — **Investigating or analyzing materials by the use of nuclear magnetic resonance, electron paramagnetic resonance or other spin effects** (arrangements or instruments for measuring magnetic resonance effects G01R 33/20)
	G01N 33/00 — **Investigating or analysing materials by specific methods not covered by the preceding groups**
	A61K 49/00 — **Preparations for testing in vivo**
	A61B 2576/00 — **Medical imaging apparatus involving image processing or analysis** (A61B 1/00009, A61B 6/52 and A61B 8/52 take precedence; image processing per se G06T; details of algorithms for analysing medical images G06T 7/0012)
	G06T 7/00 — **Image analysis, e.g. from bit-mapped to non bit-mapped**
	A61K 51/00 — **Preparations containing radioactive substances for use in therapy or testing in vivo**
	C09B 61/00 — **Dyes of natural origin prepared from natural sources,** {e.g. vegetable sources}
	G01N 2458/00 — **Labels used in chemical analysis of biological material**

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Classification

Invention

G01R 33/4608 – NMR Spectroscopy - {RF excitation sequences for enhanced detection, e.g. NOE, polarisation transfer, selection of a coherence transfer pathway}

- G01R 33/5601 - Image enhancement or correction, e.g. subtraction or averaging techniques -{involving use of a contrast agent for contrast manipulation, e.g. a paramagnetic, super-paramagnetic, ferromagnetic or hyperpolarised contrast agent}
- G01R33/5605 - Image enhancement or correction, e.g. subtraction or averaging techniques - {by transferring coherence or polarization from a spin species to another, e.g. creating magnetization transfer contrast [MTC], polarization transfer using nuclear Overhauser enhancement [NOE]}

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Classification

G01R 33/5601

context, transfer of order to the heteronucleus followed by its observation as polarization may increase the time during which hyperpolarization is available, allow better chemical discrimination, and increase the contrast against the background signals from other weakly polarized molecules.

The sequence timings are calculated for the scalar couplings of a specific grouping, so the method presented is most readily optimized in experiments in which the fate of a single molecular species over time is examined. This is the case in experiments where the hyperpolarized molecule provides contrast to highlight specific areas, such as vascular imaging. This is also the case when a specific molecule generated from the hyperpolarized molecule is of interest, as in the imaging of plaques where the bound molecule is the interesting species or in cases where the information of interest is the changing concentration or distribution of a particular metabolite. In cases of metabolite mapping where more than one of the daughter molecules of the hyperpolarized species is of inter-

G01R33/5605

According to another embodiment of the present invention, a method of performing indirect detection of a first site by transferring polarization from the first site to a second site for multiple measurements of the first site is provided. The method includes determining a scalar coupling coefficient for the polarization transfer from the first site to the second site. The first site is characterized by a first polarization. The method also includes defining a set of polarization division parameters, computing timing and phase parameters using the set of polarization division parameters, providing a pulse sequence based on the timing and phase parameters, and exposing a sample including the first site and the second site to the pulse sequence. The method further includes transferring a portion of the first polarization to a second polarization, measuring a precessing magnetization of the second site, determining a state of the first site, and repeating transferring and measuring for subsequent portions of the first polarization.

G01R 33/4608
G01R33/5605

17. A method of performing magnetic resonance with a single magnetic resonance scan sequence, the method comprising:

(a) providing, on a first site, a first nucleus having a spin order of a first type;

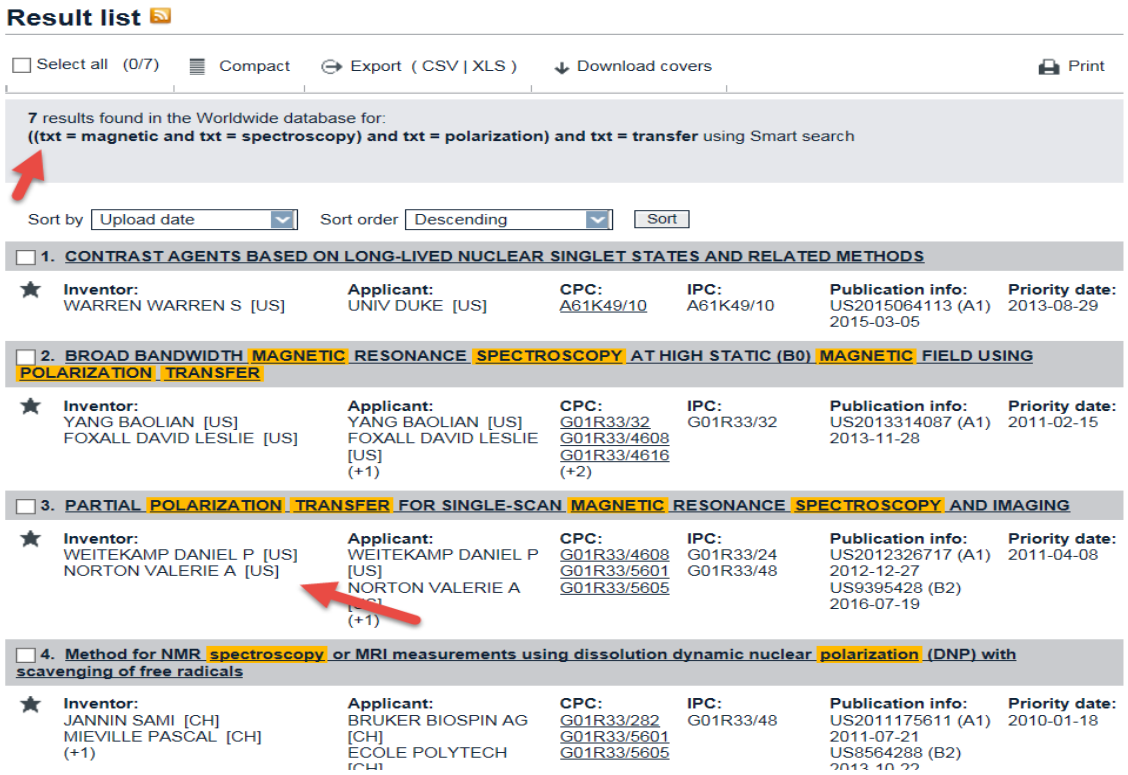
(b) transferring a fractional portion of the spin order of the first type to a second site with a desired transfer efficiency by exposing a sample including the first site and a second site to a magnetic field provided by a magnetic resonance system, wherein the second site includes a second nucleus having a spin order of a second type orthogonal to the spin order of the first type, and wherein timing and phase parameters of the magnetic field are determined by a processor in order to achieve the desired transfer efficiency;

(c) observing the spin order of the second type on the second site using a magnetic detector, the observed spin order of the second type indicating the transferred fractional portion of the spin order of the first type; and

(d) repeating (b) and (c) a predetermined number of times, with the desired transfer efficiency of each repetition being variable, in order to transfer additional fractional portions of the spin order of the first type within the single magnetic resonance scan sequence.

18. The method of claim **17** wherein the spin order of the first type comprises a nuclear spin polarization.

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Search



Result list

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7 results found in the Worldwide database for:
((txt = magnetic and txt = spectroscopy) and txt = polarization) and txt = transfer using Smart search

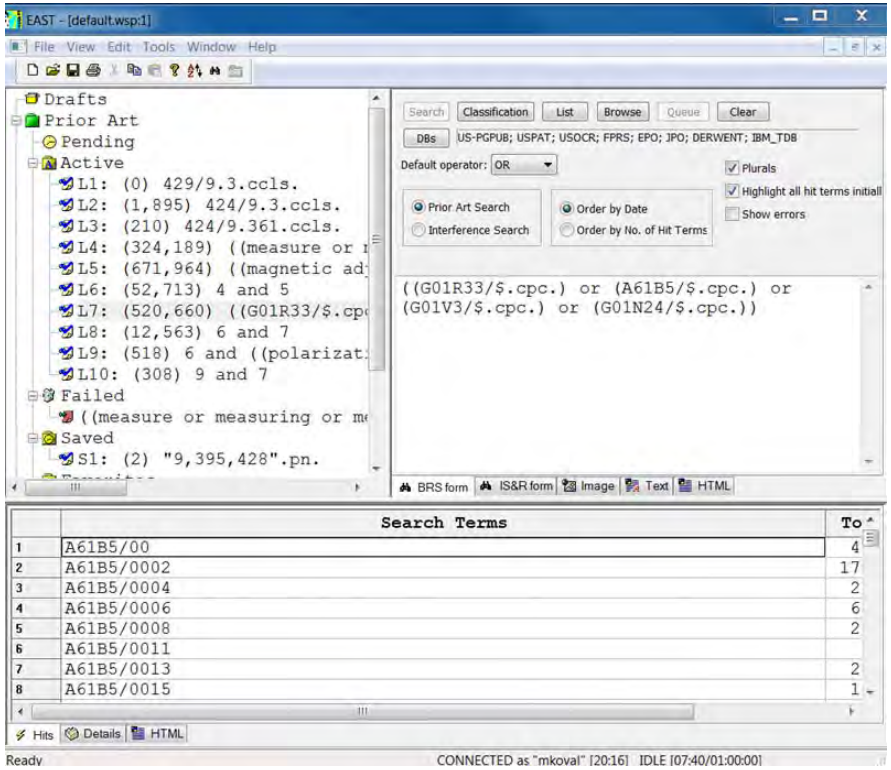
Sort by: Upload date | Sort order: Descending | Sort

1. CONTRAST AGENTS BASED ON LONG-LIVED NUCLEAR SINGLET STATES AND RELATED METHODS					
Inventor: WARREN WARREN S [US]	**Applicant:** UNIV DUKE [US]	**CPC:** A61K49/10	**IPC:** A61K49/10	**Publication info:** US2015064113 (A1) 2015-03-05	**Priority date:** 2013-08-29
2. BROAD BANDWIDTH MAGNETIC RESONANCE SPECTROSCOPY AT HIGH STATIC (B0) MAGNETIC FIELD USING POLARIZATION TRANSFER					
Inventor: YANG BAOLIAN [US] FOXALL DAVID LESLIE [US]	**Applicant:** YANG BAOLIAN [US] FOXALL DAVID LESLIE [US] (+1)	**CPC:** G01R33/32 G01R33/4608 G01R33/4616 (+2)	**IPC:** G01R33/32	**Publication info:** US2013314087 (A1) 2013-11-28	**Priority date:** 2011-02-15
3. PARTIAL POLARIZATION TRANSFER FOR SINGLE-SCAN MAGNETIC RESONANCE SPECTROSCOPY AND IMAGING					
Inventor: WEITEKAMP DANIEL P [US] NORTON VALERIE A [US]	**Applicant:** WEITEKAMP DANIEL P [US] NORTON VALERIE A [US] (+1)	**CPC:** G01R33/4608 G01R33/5601 G01R33/5605	**IPC:** G01R33/24 G01R33/48	**Publication info:** US2012326717 (A1) 2012-12-27 US9395428 (B2) 2016-07-19	**Priority date:** 2011-04-08
4. Method for NMR spectroscopy or MRI measurements using dissolution dynamic nuclear polarization (DNP) with scavenging of free radicals					
Inventor: JANNIN SAMI [CH] MIEVILLE PASCAL [CH] (+1)	**Applicant:** BRUKER BIOSPIN AG [CH] ECOLE POLYTECH [CH]	**CPC:** G01R33/282 G01R33/5601 G01R33/5605	**IPC:** G01R33/48	**Publication info:** US2011175611 (A1) 2011-07-21 US8564288 (B2) 2013-10-22	**Priority date:** 2010-01-18

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Illustration
Boolean Search Terms

- ((G01R33/$.cpc.) or (A61B5/$.cpc.) or (G01V3/$.cpc.) or (G01N24/$.cpc.))
- ((324/300-322.ccls.) or (600/407-435.ccls.) or (382/128-131.ccls.))
- ((magnetic adj5 (resonan$2 or response)) or MRI or NMR)
- ((magnetic adj5 (resonan$2 or response)) or MRI or NMR or NQR or ESR or EPR or parameter or parameterize or parameterizing or parameterized or parameterization or parameterise or parameterising or parameterised or parameterisation)
- ("hyper" or hyperpolarization or hyperpolarisation or hyperpolarize or hyperpolarise or hyperpolarizing or hyperpolarising or hyperpolarized or hyperpolarised or hyperpolarizable or hyperpolarisable or hyperpolarizably or hyperpolarisably or hyper-polarization or hyper-polarisation or hyper-polarize or hyper-polarise or hyper-polarizing or hyper-polarising or hyper-polarized or hyper-polarised or hyper-polarizable or hyper-polarisable or hyper-polarizably or hyper-polarisably)
- (transfer or transfering or transferring or transfered or transferred or transferable or transferably or switch or switching or switched or switchably or switchable or alter or altering or altered or alteration or alterably or alterable or change or changed or changeable or changeably or changing)
- ((measure or measuring or measured or measurement or obtain or obtaining or obtained or obtainable or acquire or acquired or acquiring or acquisition or calculate or calculating or calculation or calculated or find or finding or determine or determining or determined or determination or determinable or determinably) same (spin or spinning or spun or spining or spinable or spinably or precess or precessing or precessed or precession))
- (spin or proton or hydrogen or "1.sub.H" or "h.sup.1" or "1H" or "H1")

Partial/Fractional Polarization Transfer for Single-Scan Magnetic Resonance Spectroscopy and Imaging Illustration
EAST – using Boolean Search Terms



Chemical Example

UNITED STATES
PATENT AND TRADEMARK OFFICE
uspto

Individually Determine Relevant Classification

A process of making a substantially low carbohydrate beer comprising:

preparing a substantially liquid wort,

boiling the wort,

vigorously percolating a gas through the boiled wort under conditions that avoid oxidation of the wort,

thereafter cooling the wort and filtering the cooled wort, and

passing the filtered wort through a packed column having immobilized yeast providing continuous fermentation.

Possible Keywords/concepts

Claim 1. A process of making a substantially low carbohydrate beer comprising:

preparing a substantially liquid wort,

boiling the wort,

vigorously percolating a gas through the boiled wort under conditions that avoid oxidation of the wort,

thereafter cooling the wort and filtering the cooled wort, and

passing the filtered wort through a packed column having immobilized yeast providing continuous fermentation.

Possible Synonyms

Key term/concept	Synonyms
Substantially low carbohydrate	Diet; (low or reduced or reducing) (sugar or calorie or caloric); light; lite
Beer	Alcohol or alcoholic
Immobilized yeast	Immobili$4; bonded; stationary; bound; anchor$3; fix$3
Process of making beer	Brew$3; ferment$3; (cool$3 or heat$3 or boil$3 or (increas$3 or reduc$3 or decreas$3 or rais$3) temperature) with wort

Possible Keywords/concepts

Classify: (low or reduced or lite or light) and brew* and beer

Claim 1. A process of making a substantially low carbohydrate beer comprising:

preparing a substantially liquid wort,

boiling the wort,

Classify: (boil* or cool* or heat* or increas* or reduc*) and temperature and wort

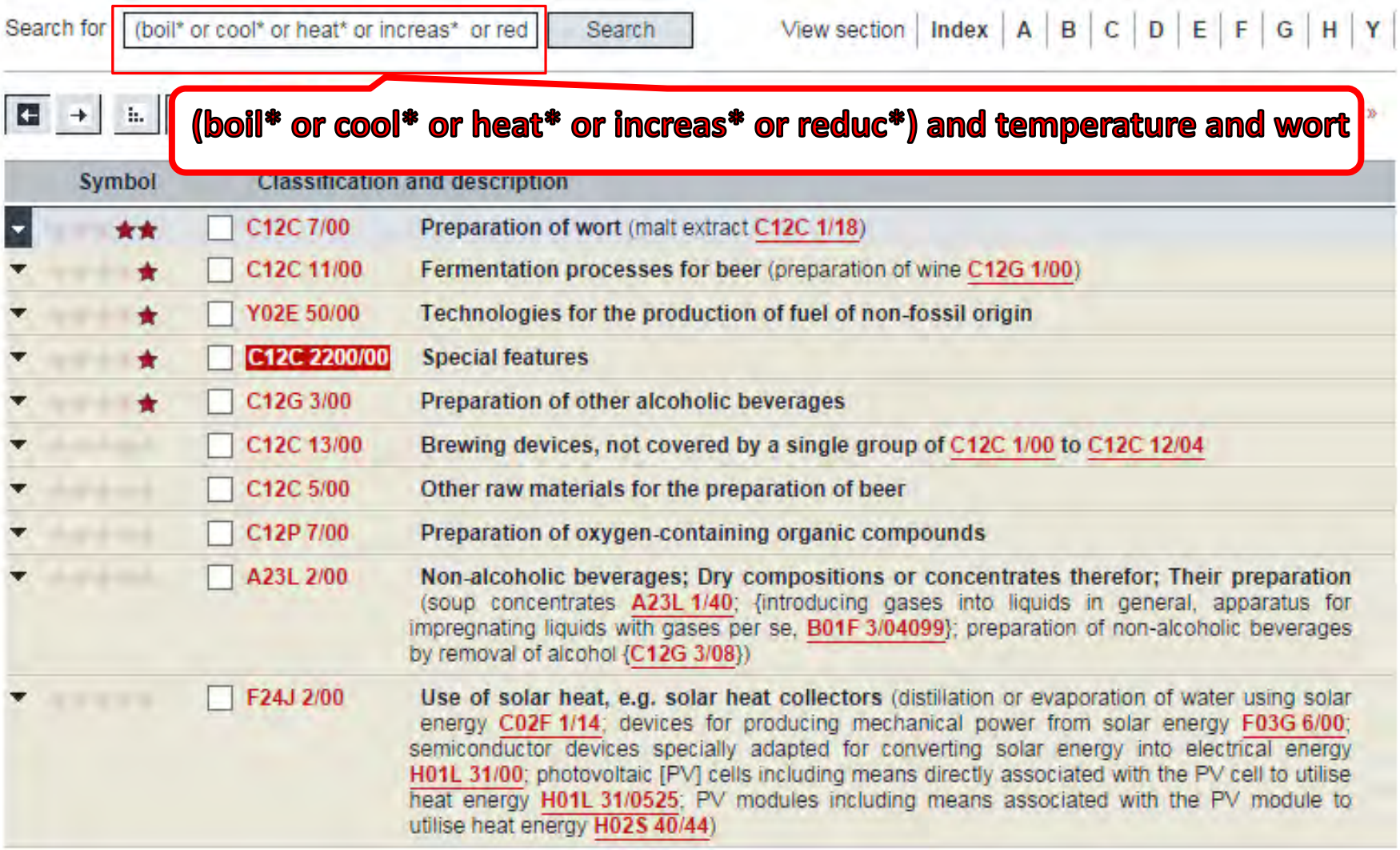
vigorously percolating a gas through the boiled wort under conditions that avoid oxidation of the wort,

thereafter cooling the wort and filtering the cooled wort, and

passing the filtered wort through a packed column having immobilized yeast providing continuous fermentation.

Classify: beer and (immobili*or fix* or bound) and (yeast or ferment*)

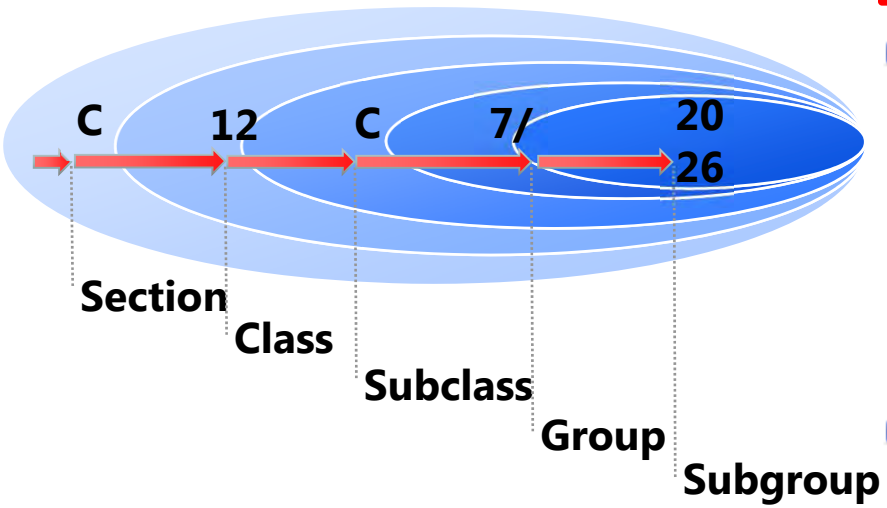
Statistically Classify 1st Main Concept



Review Hierarchy/Informative References

1st Possible Area to Search

- Areas of search:
  C12C7/20
  C12C7/26



C12C 7/00 **Preparation of wort** (malt extract C12C 1/18)

C12C 7/01 . Pretreatment of malt, e.g. malt grinding

C12C 7/04 . Preparation or treatment of the mash

C12C 7/14 . Clarifying wort (Läuterung)

C12C 7/20 . Boiling the beerwort (brew kettles C12C 13/02)

C12C 7/205 . . { Boiling with hops }

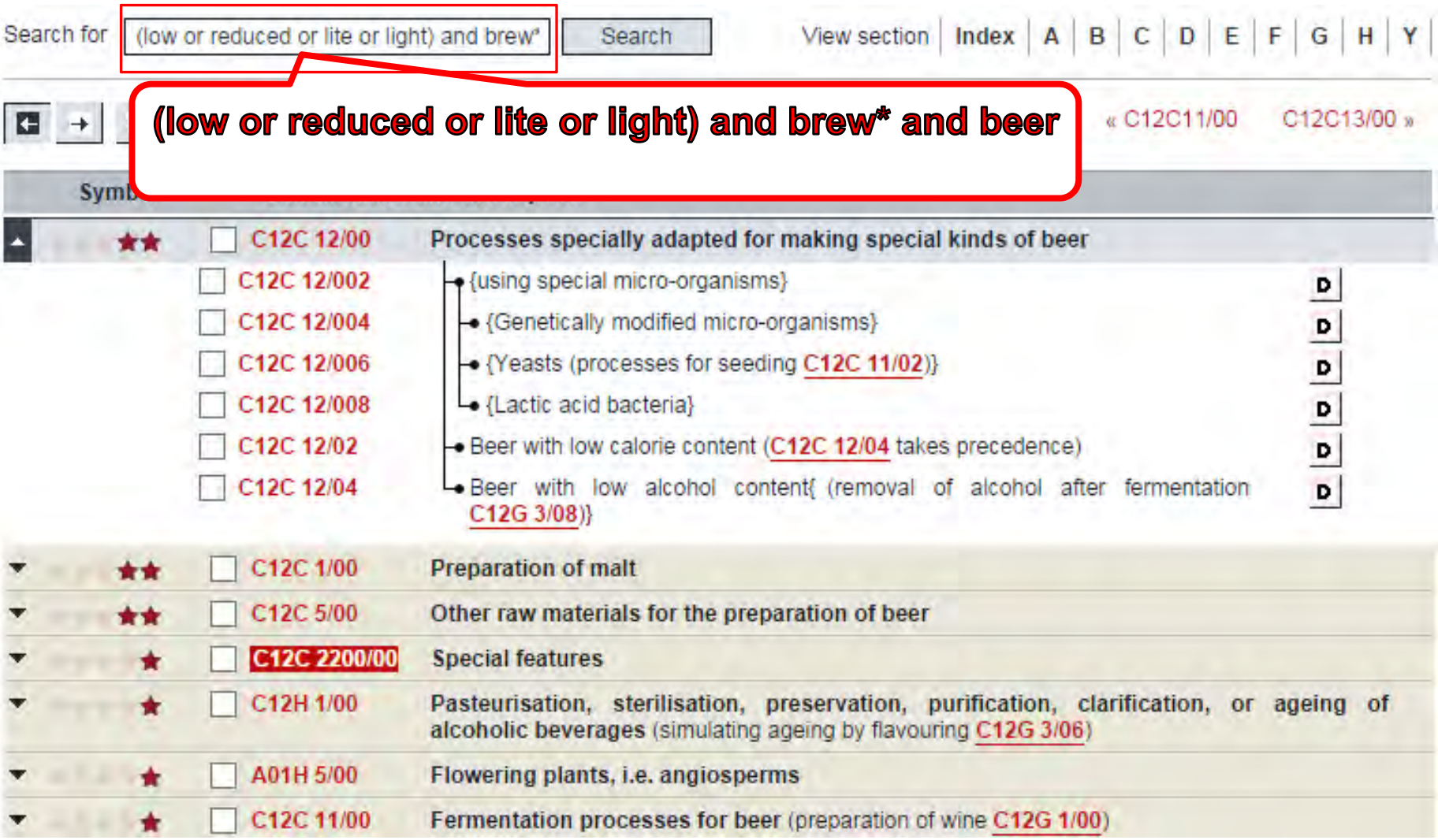
C12C 7/22 . . . Processes or apparatus specially adapted to save or recover energy

C12C 7/24 . Clarifying beerwort between hop boiling and cooling

C12C 7/26 . Cooling beerwort; Clarifying beerwort during or after the cooling

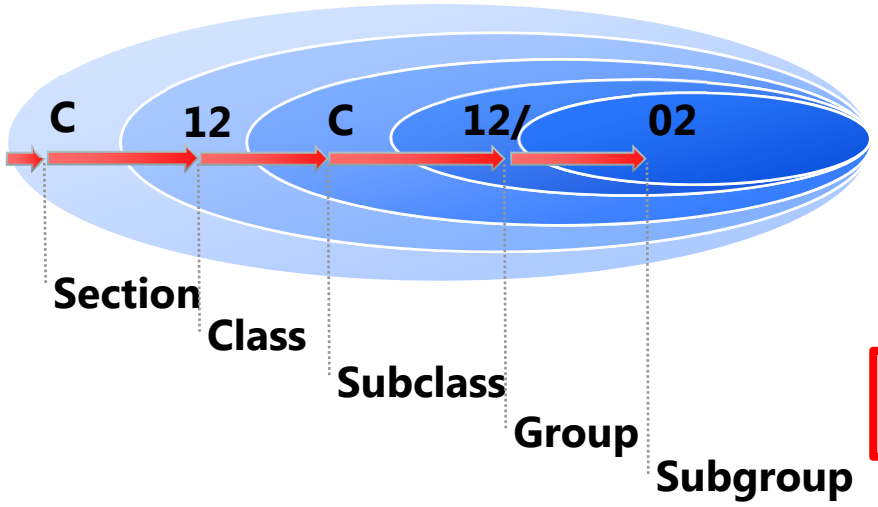
C12C 7/28 . After-treatment,{ e.g. sterilisation (C12C 11/00 takes precedence) }

Statistically Classify 2nd Main Concept



2nd Possible Area to Search

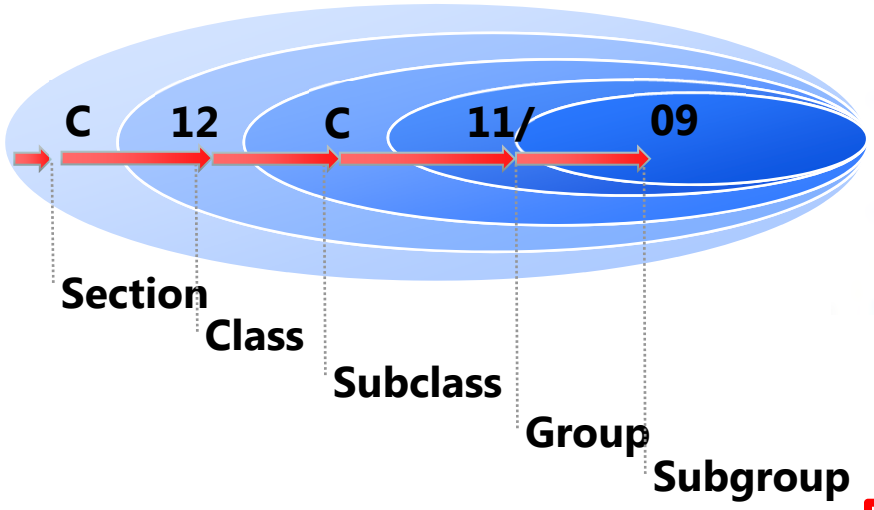
- Area of search: **C12C12/02**



C12C 12/00	**Processes specially adapted for making special kinds of beer**
C12C 12/002	. { using special micro-organisms }
C12C 12/004	. . { Genetically modified micro-organisms }
C12C 12/006	. . { Yeasts (processes for seeding C12C 11/02) }
C12C 12/008	. . { Lactic acid bacteria }
C12C 12/02	. Beer with low calorie content (C12C 12/04 takes precedence)
C12C 12/04	. Beer with low alcohol content { (removal of alcohol after fermentation C12G 3/08) }

3rd Subgroups to Search

- Area of search:
  C12C11/09



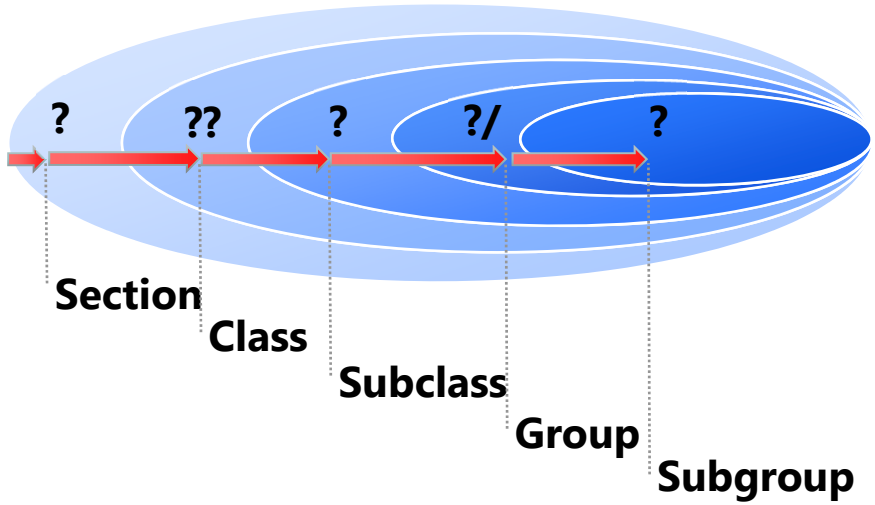
C12C 11/00		Fermentation processes for beer
C12C 11/003	.	{ Fermentation of beerwort }
C12C 11/006	. .	{ Fermentation tanks therefor }
C12C 11/02	.	Pitching yeast
C12C 11/06	.	Acidifying the wort
C12C 11/07	.	Continuous fermentation
C12C 11/075	. .	{ Bioreactors for continuous fermentation }
C12C 11/09	.	Fermentation with immobilised yeast
C12C 11/11	.	Post fermentation treatments, e.g. carbonation, concentration

Narrow then Broad CPC Search

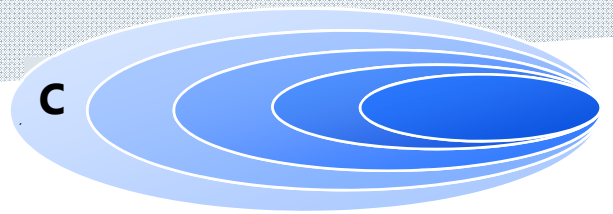
- Search subgroups as separate lists
- Cross subgroup lists
- Search lists with additional keywords
- Use Main Groups C12C12/00 /low and one dot '.' subgroups (C12C12/02.) for broad searches
- Use feedback from searching to modify and adapt the search

Option 2: Symmetrically Browse Scheme

- Progressively drill down the CPC hierarchy to locate the most relevant areas to search

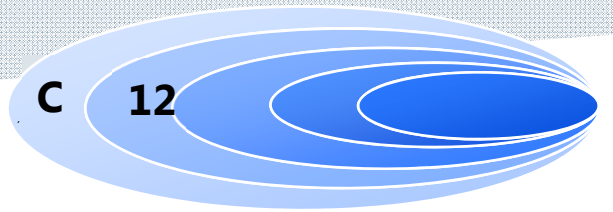


Select Relevant Section



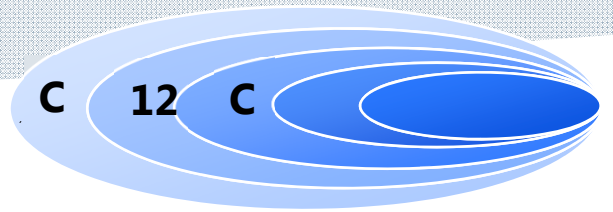
CPC	COOPERATIVE PATENT CLASSIFICATION
A	HUMAN NECESSITIES
B	PERFORMING OPERATIONS; TRANSPORTING
C	CHEMISTRY; METALLURGY
D	TEXTILES; PAPER
E	FIXED CONSTRUCTIONS
F	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING ENGINES OR PUMPS
G	PHYSICS
H	ELECTRICITY
Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-OVER TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC

Select Relevant Class



- C CHEMISTRY; METALLURGY
  - SUBSECTION: Chemistry
    - C01 INORGANIC CHEMISTRY
    - C02 TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE
    - C03 GLASS; MINERAL OR SLAG WOOL
    - C04 CEMENTS; CONCRETE; ARTIFICIAL STONE; CERAMICS; REFRACTORIES
    - C05 FERTILISERS; MANUFACTURE THEREOF
    - C06 EXPLOSIVES; MATCHES
    - C07 ORGANIC CHEMISTRY
    - C08 ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP;COMPOSITIONS BASED THEREON
    - C09 DYES; PAINTS; POLISHES; NATURAL RESINS; ADHESIVES; MISCELLANEOUS COMPOSITIONS; MISCELLANEOUS APPLICATIONS OF MATERIALS
    - C10 PETROLEUM, GAS OR COKE INDUSTRIES; TECHNICAL GASES CONTAINING CARBON MONOXIDE; FUELS; LUBRICANTS; PEAT
    - C11 ANIMAL AND VEGETABLE OILS, FATS, FATTY SUBSTANCES AND WAXES; FATTY ACIDS THEREFROM;DETERGENTS; CANDLES
    - C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING
    - C13 SUGAR INDUSTRY
    - C14 SKINS; HIDES; PELTS; LEATHER
  - SUBSECTION: Metallurgy

Select Relevant Subclass



C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING

C12C BREWING OF BEER

C12F DISTILLATION OR RECTIFICATION OF FERMENTED SOLUTIONS; RECOVERY OF BY-PRODUCTS; DENATURING OF, OR DENATURED, ALCOHOL

C12G WINE; OTHER ALCOHOLIC BEVERAGES; PREPARATION THEREOF

C12H PASTEURISATION; STERILISATION; PRESERVATION; PURIFICATION; CLARIFICATION; AGEING

C12J VINEGAR; ITS PREPARATION

C12L PITCHING OR DEPITCHING MACHINES; CELLAR TOOLS

C12M APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; { APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS }

C12N MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF; PROPAGATING, PRESERVING OR MAINTAINING MICRO-ORGANISMS; MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA

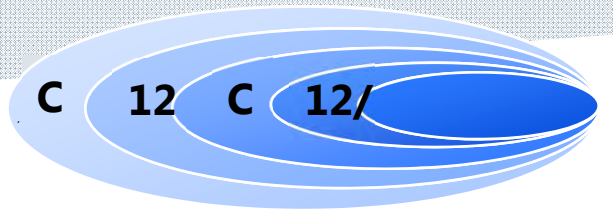
C12P FERMENTATION OR ENZYME-USING PROCESSES TO SYNTHESISE A DESIRED CHEMICAL COMPOUND OR COMPOSITION OR TO SEPARATE OPTICAL ISOMERS FROM A RACEMIC MIXTURE

C12Q MEASURING OR TESTING PROCESSES INVOLVING ENZYMES OR MICRO-ORGANISMS; COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES

C12R PROCESSES USING MICRO-ORGANISMS

C12Y ENZYMES

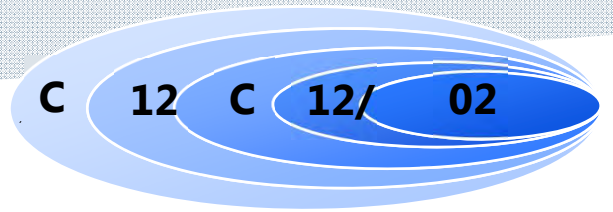
Select Relevant Main Groups



C12C **BREWING OF BEER** (cleaning of raw materials A23N; pitching and depitching machines, cellar tools C12L; propagating yeasts C12N 1/14 ; non-beverage ethanolic fermentation C12P 7/06)

- **C12C 1/00** Preparation of malt
- **C12C 3/00** Treatment of hops
- **C12C 5/00** Other raw materials for the preparation of beer
- **C12C 7/00** Preparation of wort (malt extract C12C 1/18)
- **C12C 9/00** Methods specially adapted for the making of beerwort
- **C12C 11/00** Fermentation processes for beer (preparation of wine C12G 1/00)
- **C12C 12/00** Processes specially adapted for making special kinds of beer
- **C12C 13/00** Brewing devices, not covered by a single group of **C12C 1/00** to **C12C 12/04**
- **C12C 2200/00** Special features

Drill down Subgroup



For Example for main concept 1: low calorie

C12C 12/00 **Processes specially adapted for making special kinds of beer**

C12C 12/002 . { using special micro-organisms }

C12C 12/004 . . { Genetically modified micro-organisms }

C12C 12/006 . . { Yeasts (processes for seeding C12C 11/02) }

C12C 12/008 . . { Lactic acid bacteria }

C12C 12/02 . Beer with low calorie content (C12C 12/04 takes precedence)

C12C 12/04 . Beer with low alcohol content { (removal of alcohol after fermentation C12G 3/08) }

Follow same procedure to main concept 2: immobilized yeast

Advanced Chemical Example

UNITED STATES
PATENT AND TRADEMARK OFFICE
uspto

Published Document: 2015/0224690

US 20150224690A1

(19) **United States**

(12) **Patent Application Publication**

CHEN

(10) **Pub. No.: US 2015/0224690 A1**

(43) **Pub. Date: Aug. 13, 2015**

(54) **METHOD FOR MOLDING A DECORATIVE ZIPPER PULL AND MOLD FOR A ZIPPER PULL**

(71) Applicant: **Duraflex Hong Kong Limited**, Sheung Wan (HK)

(72) Inventor: **Te Chien CHEN**, Tsuen Wan (HK)

(73) Assignee: **Duraflex Hong Kong Limited**, Sheung Wan (HK)

(21) Appl. No.: **14/175,022**

(22) Filed: **Feb. 7, 2014**

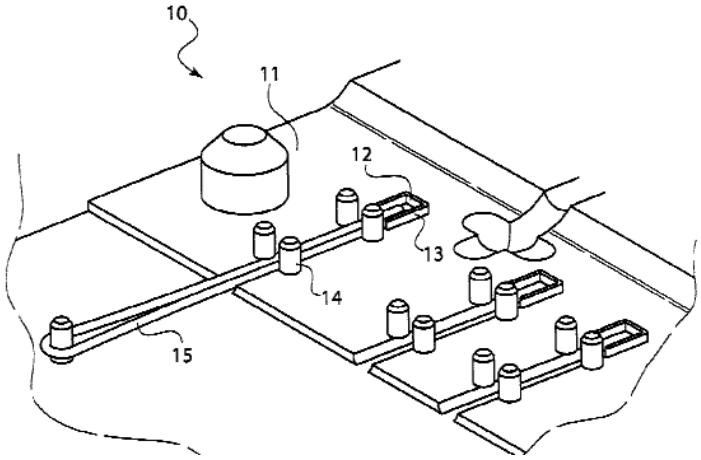
Publication Classification

(51) **Int. Cl.**
B29C 45/14 (2006.01)
B29C 45/26 (2006.01)

(52) **U.S. Cl.**
CPC ***B29C 45/14426*** (2013.01); ***B29C 45/14065*** (2013.01); ***B29C 45/2673*** (2013.01)

(57) **ABSTRACT**

A molding process for creating a decorative pull has two separate molding steps. In the first molding step, a first top mold portion, and a bottom mold portion are used. The bottom mold portion has a mold compartment with an indentation in the bottom. An end of a soft string is placed in this compartment with the end disposed over the indentation. The first top mold portion is closed over the bottom mold portion and molding material is injected. The molding material enters the mold cavity and flows into the indentation to cover the ends of the string entirely, to create a first molded component. A second top mold portion is then placed over the bottom mold potion and molding material is then injected into the second mold cavity formed by the second top mold portion to cover the first molded component and create a molded pull for use on zippers or other items.



Identifying Inventive concept: in Claims

1. A method for molding a decorative zipper pull, comprising:

providing a first top mold portion and a bottom mold portion, the first top and bottom mold portions forming a first mold cavity, wherein the bottom mold portion has two side walls, an end wall and an indentation adjacent the end wall;

placing at least one end of a string in the first mold cavity, such that said at least one end is disposed directly above the indentation;

closing first top mold portion over the bottom mold portion;

injecting molding material into the first mold cavity such that the molding material enters the first mold cavity and flows into the indentation to cover the at least one end of the string entirely, to create a first molded component;

removing the first top mold portion;

placing a second top mold portion having a second mold cavity over the bottom mold portion;

injecting molding material into the second mold cavity to create a molded pull; and

removing the molded pull from the mold portions.

8. A molding assembly for molding a decorative pull, comprising:

a first top mold portion,

a bottom mold portion, with a mold cavity being formed by the top and bottom mold portions when the first top mold portion is closed over the bottom mold portion, wherein a bottom surface of the bottom mold portion has side walls and an end wall forming a compartment for receiving ends of a string, and wherein said bottom surface adjacent the end wall has an indentation,

wherein when a string is placed in the compartment with the ends of the string positioned above the indentation, and molding material is injected into the mold cavity, the molding material flows into the indentation around the string and entirely covers the ends of the string, and

a second top mold portion having a second mold cavity, said second top mold portion being configured such that a molded article formed by the first top mold portion and the bottom portion be molded in a second step by replac-

Identifying Inventive concept: in Drawings

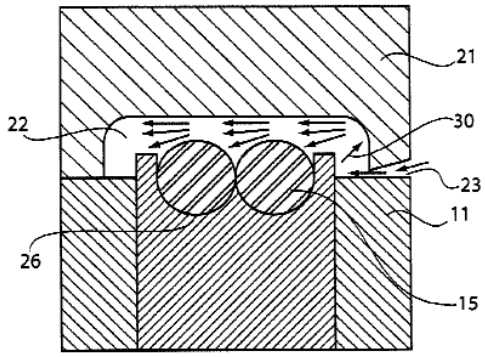


FIG. 4

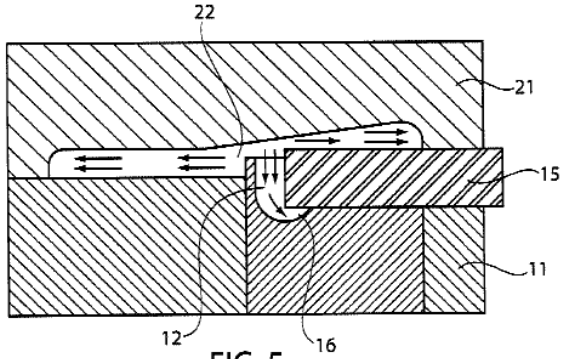


FIG. 5

Identifying Inventive concept: in Summary of Invention

[0006] It would be desirable to provide an improved and simplified method for molding a pull, in which the string is prevented from moving during the molding process and in which the string is securely molded within the molding material.

[0007] These and other objects are accomplished by a molding process using two separate molding steps. In the first molding step, a first top mold portion and a bottom mold portion are used. The first top and the bottom mold portions form a first mold cavity. The bottom mold portion has two side walls, an end wall and an indentation adjacent the end wall. The side walls and end wall form a compartment in the mold. At least one end of a soft string is placed in this compartment with the end or ends disposed on top of the indentation. Preferably, the string is placed so that the end of the string extends over the indentation by a length that is equal to the diameter of the string. The indentation can be molded based on the type of string, so that the length of the indentation is preferably two times the diameter of the string. This way, the string extends exactly half-way into the length of the indentation.

[0008] The first top mold portion is then closed over the bottom mold portion and molding material is injected into the first mold cavity. During this molding process, the molding material enters the first mold cavity and flows into the indentation to cover the ends of the string entirely, to create a first molded component. The first top mold portion is then removed and a second top mold portion is placed over the bottom mold portion. The second top mold portion has a second mold cavity that surrounds the first molded component. Molding material is then injected into the second mold cavity in a second molding step to create a finished molded pull. In a final step, second top mold portion is removed and the molded pull is removed from the bottom mold portion. The molding material in the two molding steps can be the same material, or two different materials. The molding material can be any suitable plastic material, and can be opaque, translucent or transparent. With translucent and transparent pulls, securing of the string is of high importance, so that the ends of the string remain exactly in a designated position, which is normally in the center of the mold during molding.

Search for zipper pull Search View section

Symbol	Classification and description
★★	A44B 19/00 **Slide fasteners**
★	Y10T 24/00 **Buckles, buttons, clasps, etc.**
★	A45C 13/00 **Details; Accessories** (haberdashery A44; hinge E05D)
	A45C 5/00 **Rigid or semi-rigid luggage** (collapsible or extensi
	E05B 65/00 **Locks** {or fastenings} **for special use** { (for dishwash container closures B65D 55/02; for elevator doors B66B 13/16; laundry washing machines D06F 37/42, D06F 39/14; for two win F24C 15/022; coin freed locks G07F 17/12, G07F 17/14; switches
	A47G 25/00 **Household implements used in connection with holders** (wardrobes A47B 61/00)
	B65D 33/00 **Details of, or accessories for, sacks or bags**
	A41F 1/00 **Fastening devices specially adapted for garmer** A41D 5/006}; fastening devices in general A44B; {for b
	A63H 33/00 **Other toys**

Cooperative Patent Classification

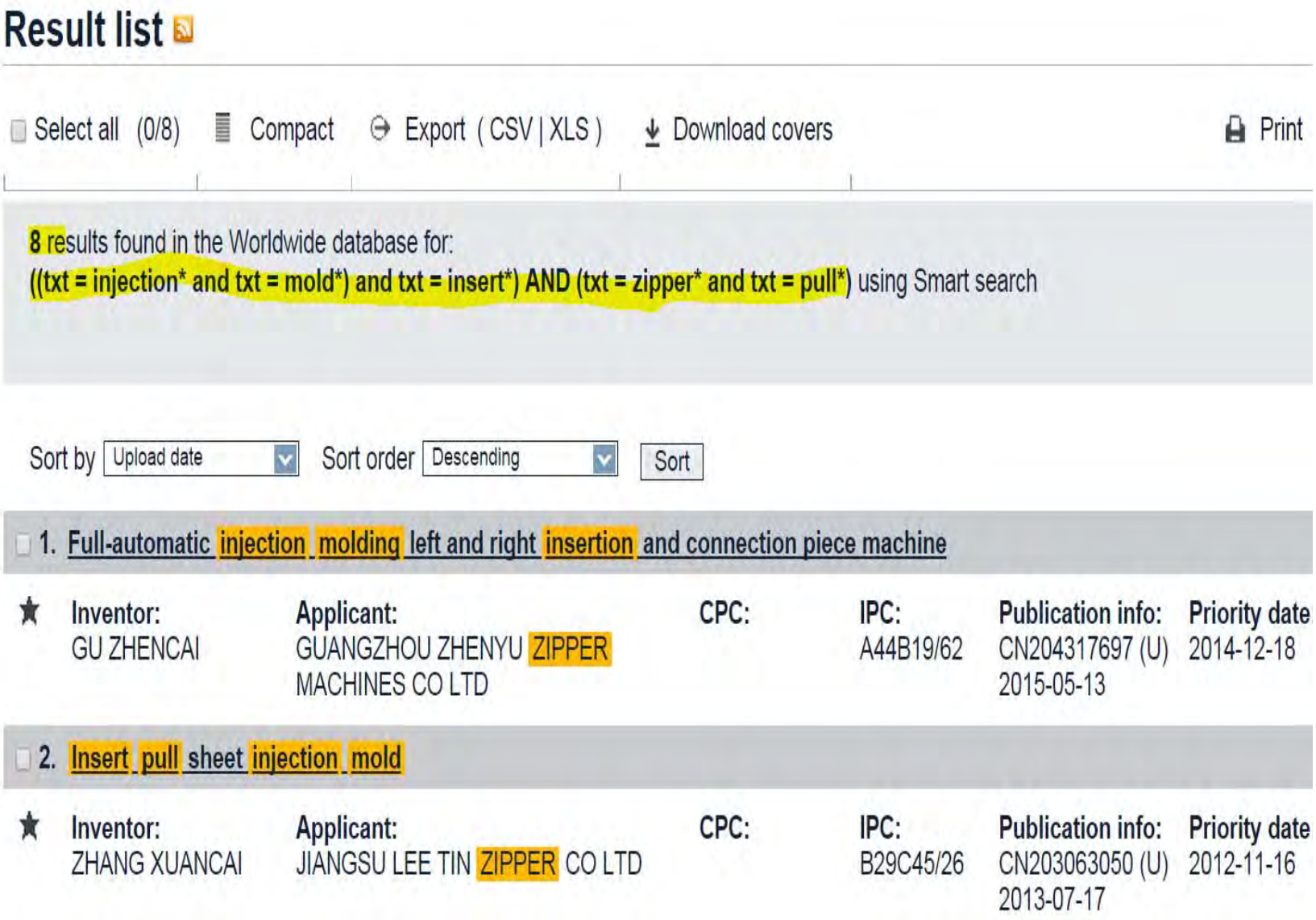
Search for (injection* mold* insert*) AND (p Search

View section | Index | A | B | C | D | E | F | G | H | Y

« B29C44/00 B29C47/00 »

Symbol	Classification and description
**	**B29C 45/00** Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould; Apparatus therefor (injection blow-moulding **B29C 49/06**)
	B22D 17/00 Pressure die casting or injection die casting, i.e. casting in which the metal is forced into a mould under high pressure

Finding the patent documents:



Result list

Select all (0/8) Compact Export (CSV | XLS) Download covers Print

8 results found in the Worldwide database for:
((txt = injection* and txt = mold*) and txt = insert*) AND (txt = zipper* and txt = pull*) using Smart search

Sort by Upload date Sort order Descending Sort

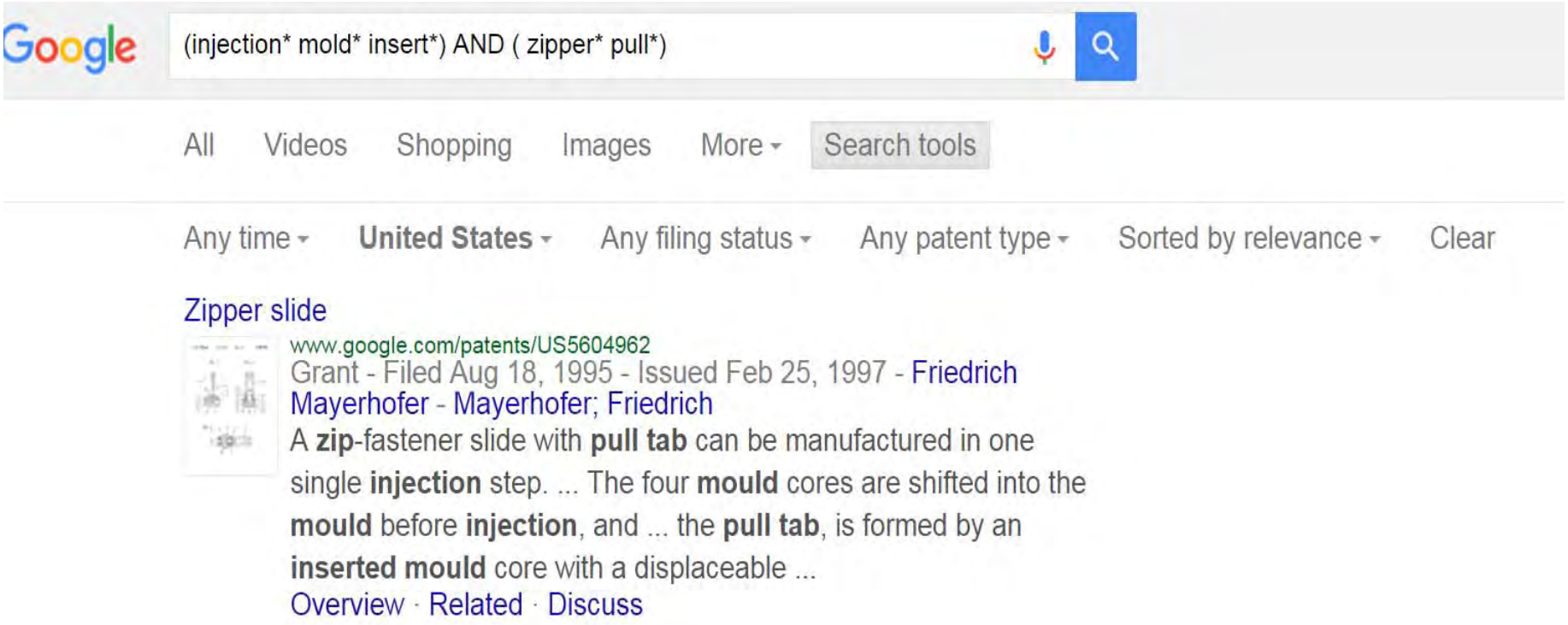
1. Full-automatic injection molding left and right insertion and connection piece machine

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date
GU ZHENCAI	GUANGZHOU ZHENYU ZIPPER MACHINES CO LTD		A44B19/62	CN204317697 (U) 2015-05-13	2014-12-18

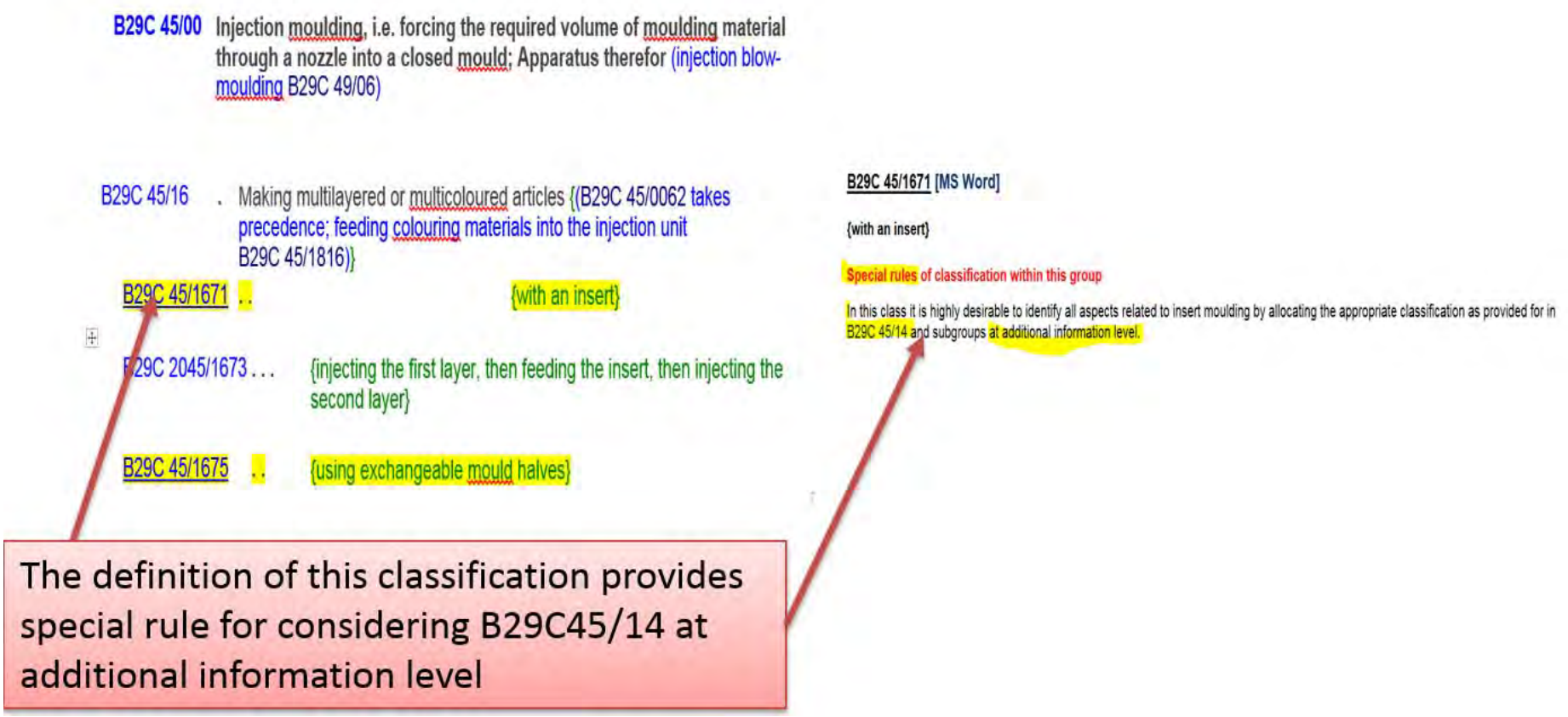
2. Insert pull sheet injection mold

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date
ZHANG XUANCAI	JIANGSU LEE TIN ZIPPER CO LTD		B29C45/26	CN203063050 (U) 2013-07-17	2012-11-16

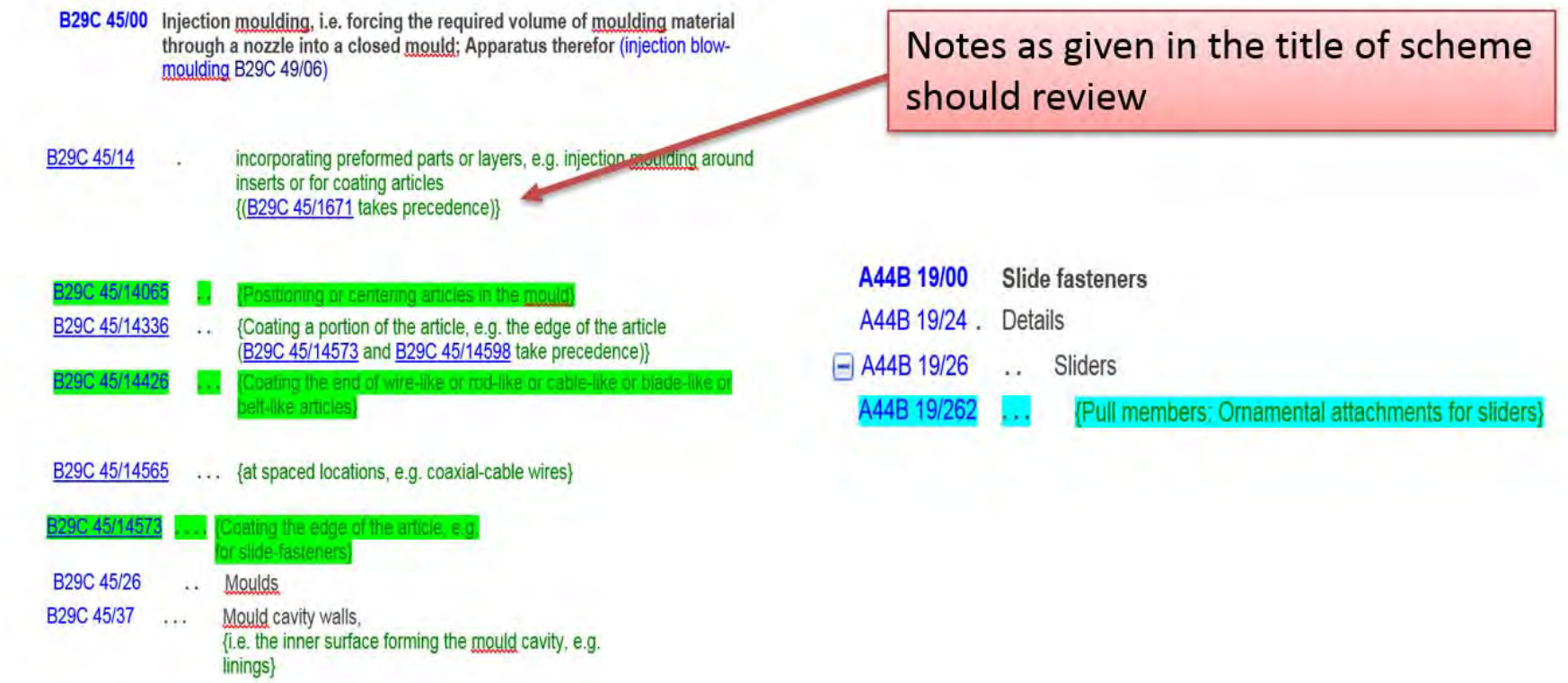
Finding the patent documents:



Finding Claimed subject matter in CPC system



Finding Claimed subject matter in CPC system



CPC classification for the subject matter of the document

1. A method for molding a decorative zipper pull, comprising:

providing a first top mold portion and a bottom mold portion, the first top and bottom mold portions forming a first mold cavity, wherein the bottom mold portion has two side walls, an end wall and an indentation adjacent the end wall;

placing at least one end of a string in the first mold cavity, such that said at least one end is disposed directly above the indentation;

closing first top mold portion over the bottom mold portion;

injecting molding material into the first mold cavity such that the molding material enters the first mold cavity and flows into the indentation to cover the at least one end of the string entirely, to create a first molded component;

removing the first top mold portion;

placing a second top mold portion having a second mold cavity over the bottom mold portion;

injecting molding material into the second mold cavity to create a molded pull; and

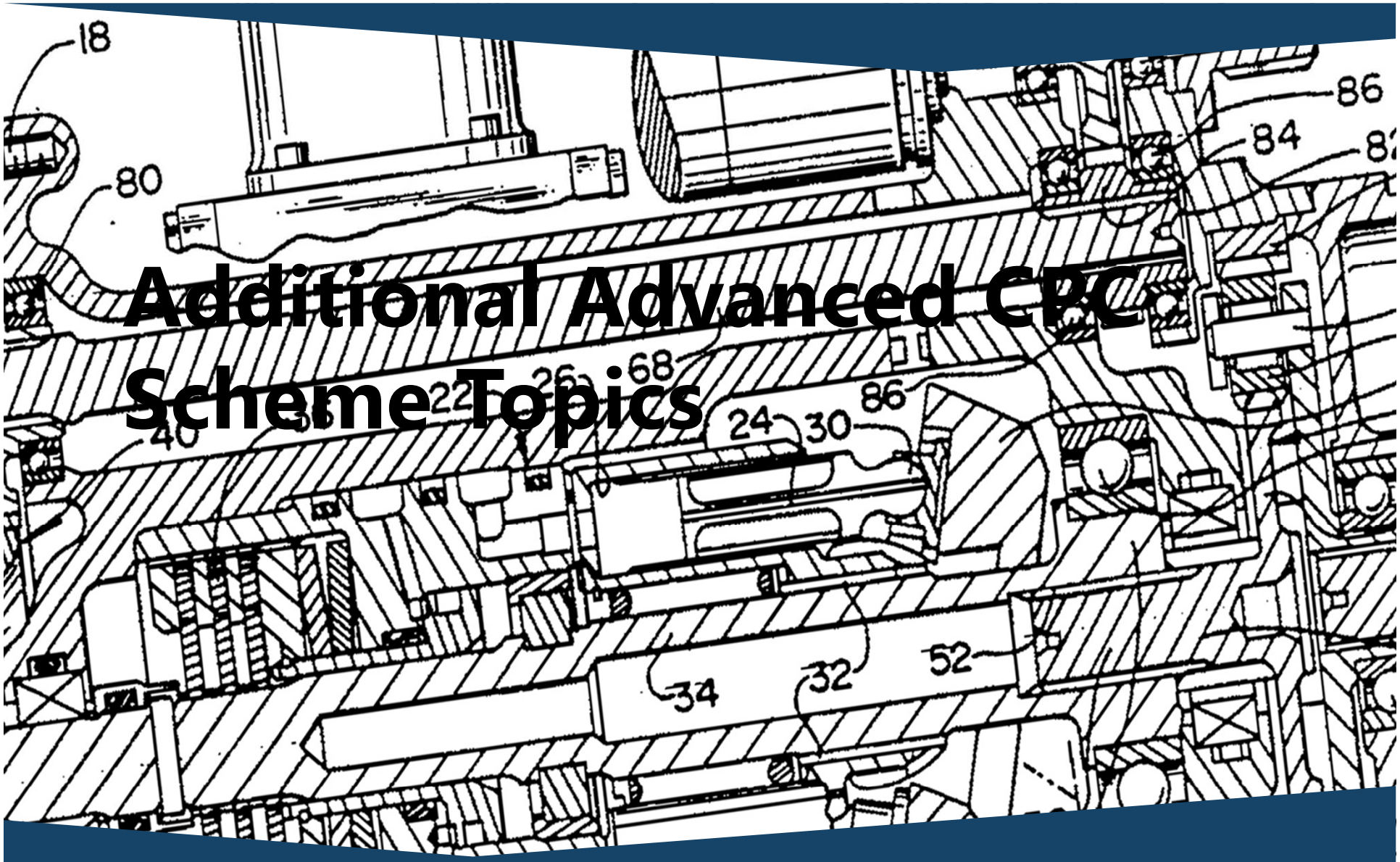
removing the molded pull from the mold portions.

B29C 45/1671 (F)
B29C 45/14065 (A)
B29C 45/14426 (A)

B29C 45/1675 (I)

B29C45/14573 (A)
A44B 19/262 (A)

Additional Advanced CPC Scheme Topics



UNITED STATES
PATENT AND TRADEMARK OFFICE
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FUNCTION -ORIENTED AND APPLICATION-ORIENTED PLACES

Function and Application-Oriented Places

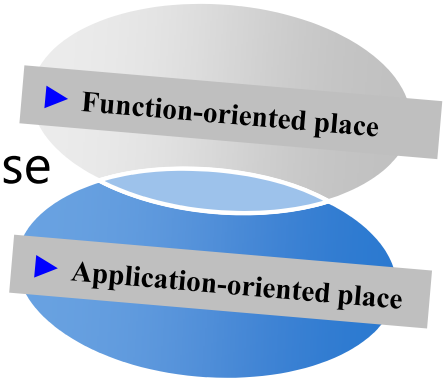
► CPC distinguishes between two fundamental categories of technical subjects:

• Things "per se", "in general", i.e. characterized by their intrinsic nature or function, i.e. **independent of its field of use**

► **Function-oriented place**

• Things specially adapted for particular use or purpose

► **Application-oriented place**



Note: In **function-oriented places** one often finds **limiting references** to application places containing standard wording "specially adapted for"

Function Application places: Example

F16F SPRINGS; SHOCK-ABSORBERS; MEANS FOR DAMPING VIBRATION

NOTE

This subclass covers:

- springs, shock-absorbers or vibration-dampers;
- their arrangement in, or adaptation for, particular apparatus if not provided for in the subclasses covering said apparatus.

Function-oriented place

This subclass does not cover inventions concerning the arrangement or adaptation of springs, shock-absorbers or vibration-dampers in, or for, particular apparatus, if provided for in the subclasses concerning the said apparatus, e.g.

A47C 23/00 to A47C 27/00 Spring mattresses
{ A61F 2/00 Prostheses }
A63C 5/075 Vibration dampers in skis
B60G Vehicle suspensions
B60R 19/24 Mounting of bumpers on vehicles
B61F Rail vehicle suspensions
B61G 11/00 Buffers for railway or tramway vehicles
B62D 21/15 Vehicle chassis frames having impact absorbing means

Application-oriented place

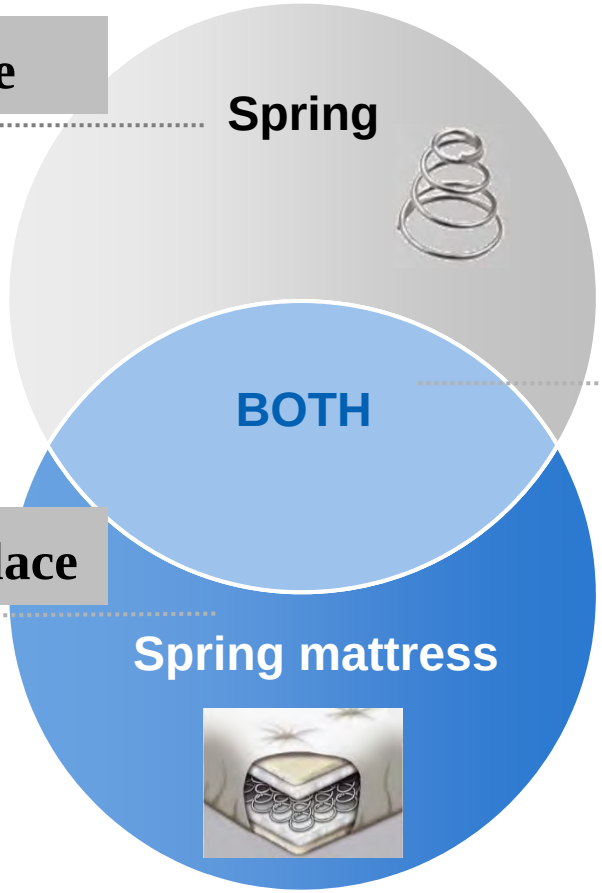
Where to Search First?

Function-oriented place

Is the technical subject of the invention a spring?

Application-oriented place

Is the technical subject a special adaptation of a spring for use in a spring mattress?

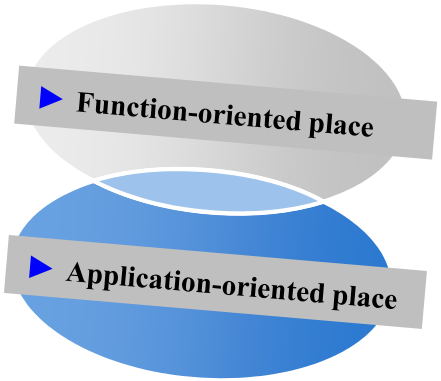


Do the essential technical characteristics of the subject relate to **both** the instrinsic nature or function of a spring **and** to adaptating springs for use in a spring mattress?

Identify most relevant places

USE CPC scheme features

- **Notes**
- **Warnings**
- Definition is **Hyperlinked**
- References **(pointers to other places)**



Function vs. Application
Apparatus vs Process
Process vs. Product

Are classifications in image and text always the same?

- No, the following actions cause the CPC classification picture to change
  - Classification of another family member in another CPC group
  - Project document reclassification activities
  - Ad hoc reclassification by Patent Office personal

Classification symbols on Patents: image rendition vice text rendition

(12) **United States Patent**
Fitzgerald et al.

(10) **Patent No.: US 8,692,660 B2**
(45) **Date of Patent: Apr. 8, 2014**

(54) **COMBINATION INSTRUMENT**

(75) Inventors: **Manfred Fitzgerald**, Chiesanuova (IT); **Filippo Perini**, Bobbio (IT); **Corrado Rebottini**, Crevalcore (IT); **Stefano Mazzetti**, Casalecchio di Reno (IT)

(73) Assignee: **Automobili Lamborghini S.p.A.**, Sant' Agata Bologna (IT)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 415 days.

(21) Appl. No.: **12/677,389**

(22) PCT Filed: **Aug. 9, 2008**

(86) PCT No.: **PCT/EP2008/006590**
§ 371 (c)(1),
(2), (4) Date: **Oct. 26, 2010**

(87) PCT Pub. No.: **WO2009/033537**
PCT Pub. Date: **Mar. 19, 2009**

(65) **Prior Publication Data**
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(30) **Foreign Application Priority Data**
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(51) **Int. Cl.**
B60Q 1/00 (2006.01)
B60Q 1/54 (2006.01)
B60K 35/00 (2006.01)
B60K 37/02 (2006.01)

(52) **U.S. Cl.**
CPC . ***B60Q 1/54*** (2013.01); ***B60K 35/00*** (2013.01); *B60K 2350/1072* (2013.01); ***B60K 37/02*** (2013.01)
USPC **340/441**; 348/148; 362/23; 715/772

(58) **Field of Classification Search**
CPC .. B60Q 1/54; B60K 35/00; B60K 2350/1072; B60K 37/02
USPC 340/441; 348/148; 362/23, 29; 701/36, 701/454; 715/772, 841
See application file for complete search history.

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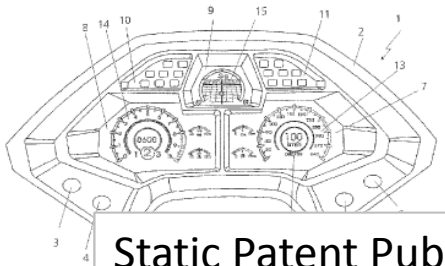
Primary Examiner — John A Tweel, Jr.
(74) *Attorney, Agent, or Firm* — Dias & Halsey LLP

(57) **ABSTRACT**

An instrument cluster for the instrument panel of a motor vehicle has at least one display on which relevant operational data of the vehicle can be displayed. The at least one display is freely programmable with respect to the data displayed on it and can be switched between at least two different configurations.

20 Claims, 2 Drawing Sheets



Static Patent Publication

Bibliographic data: US8692660 (B2) — 2014-04-08

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Combination Instrument

Page bookmark	US8692660 (B2) - Combination Instrument
Inventor(s):	FITZGERALD MANFRED [IT]; PERINI FILIPPO [IT]; REBOTTINI CORRADO [IT]; MAZZETTI STEFANO [IT] +
Applicant(s):	FITZGERALD MANFRED [IT]; PERINI FILIPPO [IT]; REBOTTINI CORRADO [IT]; MAZZETTI STEFANO [IT]; AUTOMOBILI LAMBORGHINI SPA [IT] +
Classification:	- international: ***B60K35/00; B60K37/02; B60Q1/00; B60Q1/54***
	- cooperative: B60K35/00; B60K37/02; B60Q1/54; B60K2350/1072; B60K2350/901
Application number:	US20080677389 20080809
Priority number(s):	DE20071042652 20070910 ; WO2008EP06590 20080809
Also published as:	US2011037583 (A1) DE102007042652 (A1) WO2009033537 (A1) EP2200853 (A1) EP2200853 (B1)

USPTO PatFT

Current U.S. Class:	**340/441**; 348/148; 362/23.01; 715/772
Current CPC Class:	B60K 35/00 (20130101); B60K 37/02 (20130101); B60Q 1/54 (20130101); B60K 2350/901 (20130101); B60K 2350/1072 (20130101)
Current International Class:	B60Q 1/00 (20060101)
Field of Search:	;340/441 ;348/148 ;362/23,29 ;701/36,454 ;715/772,841

B60K 2350/901 was added after publication

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CPC Resources

- CPC General Website:
  - http://www.CPCinfo.org
- Link to USPTO Classification Homepage:
  - http://www.uspto.gov/web/patents/classification/
- Guide to the CPC:
  - http://www.cooperativepatentclassification.org/publications/GuideToTheCPC.pdf
- Espacenet the EPO's public search tool:
  - http://worldwide.espacenet.com/
- CPC Online Resources and Training Materials
  - http://www.cooperativepatentclassification.org/Training.html
- USPTO PatFT and AppFT
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